LIFENET HEALTH
REGISTRATION NO. 61713
COMPLIANCE TEST REPORT
DETERMINATION
OF
ETHYLENE OXIDE REMOVAL EFFICIENCY

JANUARY 29 AND 30, 2019

Prepared for

LIFENET HEALTH
5733 BAYSIDE ROAD, SUITES 103-108
VIRGINIA BEACH, VIRGINIA 23455

Prepared by

AIR MONITORING SPECIALISTS, INC.
22 RODMAN ROAD
RICHMOND, VIRGINIA 23224

Project

3M MODEL AE ABATORS AB-D AND AB-E

Reviewed by
Initials: JNH
Date: 3/12/19

REPORT CERTIFICATION

The sampling and analysis performed for this report were carried out under my direction and supervision, and I hereby certify that, to the best of my knowledge, the test report is authentic and accurate.

Signature: _____

Date: FEBRUARY 28, 2019

Bruce A. Gerber
President
Air Monitoring Specialists, Inc.

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EXECUTIVE SUMMARY

Air Monitoring Specialists, Inc. (AMS) was retained by LifeNet Health (Registration NO. 61713), to determine the ethylene oxide removal efficiency for two catalytic abators (AB-D and AB-E). The removal efficiency tests were performed in a series of three one-hour tests. The tests were conducted on January 29 and 30, 2019 at the facility located at 5733 Bayside Road, Suites 103-108 in Virginia Beach, Virginia. The results of the removal efficiency tests are summarized in the following tables:

TABLE I-1

SUMMARY OF ABATOR AB-D ETHYLENE OXIDE REMOVAL EFFICIENCY

TEST #	ETHYLENE OXIDE / PPM	REMOVAL EFFICIENCY / %
1 - INLET	272	
OUTLET	1.01	99.6
2 - INLET	1,114	
OUTLET	2.45	99.8
3 - INLET	541	
OUTLET	0.559	99.9
AVERAGE INLET	642.3	
AVERAGE OUTLET	1.34	
AVERAGE REMOVAL EFFICIENCY	99.8	

TABLE I-2

SUMMARY OF ABATOR AB-E ETHYLENE OXIDE REMOVAL EFFICIENCY

TEST #	ETHYLENE OXIDE / PPM	REMOVAL EFFICIENCY / %
1 - INLET	2,199	
OUTLET	0.496	99.9
2 - INLET	1,806	
OUTLET	1.05	99.9
3 - INLET	2,131	
OUTLET	0.496	99.9
AVERAGE INLET	2,045.3	
AVERAGE OUTLET	0.68	
AVERAGE REMOVAL EFFICIENCY	99.9	

1.0 INTRODUCTION

Removal efficiency testing was conducted at LifeNet Health in Virginia Beach, Virginia on January 29 and 30, 2019, to determine the ethylene oxide removal efficiency for two catalytic abators (AB-D and AB-E).

1.1 TEST PARTICIPANTS

Table 1-1 lists the personnel involved in the test program.

TABLE 1-1

TEST PARTICIPANTS

LifeNet Health	Jeremy Hirschbeck – Senior Process Engineer
Virginia Department of Environmental Quality	Matthew Slemp – Air Compliance Inspector
Air Monitoring Specialists, Inc.	Phillip Gerber

1.2 OUTLINE OF TEST PROGRAM

Table 1-2 is a test log that presents the sampling locations, primary test methods used, test dates, run numbers and run times for the test program.

TABLE 1-2

TEST LOG

Sampling Location	Test Run Methods	Test Run Date	Test Run Numbers and Times
Abator AB-D Inlet	EPA Method 18	January 29, 2019	1 14:03 – 15:03
	EPA Method 18	January 30, 2019	2 09:41 – 10:41
	EPA Method 18	January 30, 2019	3 12:36 – 13:36
Abator AB-D Outlet	EPA Method 18	January 29, 2019	1 14:03 – 15:03
	EPA Method 18	January 30, 2019	2 09:41 – 10:41
	EPA Method 18	January 30, 2019	3 12:36 – 13:36

TABLE 1-2 (CONT.)

TEST LOG

Sampling Location	Test Run Methods	Test Run Date	Test Run Numbers and Times
Abator AB-E Inlet	EPA Method 18	January 29, 2019	1 14:44 – 15:44
	EPA Method 18	January 30, 2019	2 09:34 – 10:34
	EPA Method 18	January 30, 2019	3 12:18 – 13:18
Abator AB-E Outlet	EPA Method 18	January 29, 2019	1 14:44 – 15:44
	EPA Method 18	January 30, 2019	2 09:34 – 10:34
	EPA Method 18	January 30, 2019	3 12:18 – 13:18

2.0 PROCESS DESCRIPTION AND OPERATION

3M 8XL Steri-Vac EO sterilizers #7 (S/N 350635) and #9 (S/N 350651) and Abators D (S/N 170116) and E (S/N 170133) were used during this efficiency testing. EO sterilizer #7 is connected to Abator D and EO sterilizer #9 is connected to Abator E. The sterilizers were preset to allow only one sterilizer to exhaust at a time. Three cycles were run and one 170 gram EO cartridge was used for each cycle. During the testing, it was verified that the Abator Ready "Green" light was ON before the start of each cycle.

The following cycle operating parameters were used:

- Cycle Description: Custom stored in program 2
- Preheat: 0 minutes
- Vacuum: 160 mBar
- Relative Humidity 60%
- Exposure 3 minutes
- Aeration 0 minutes, no locked aeration

Sampling was started after completion of the Gas Expose Phase. Gas removal to the Abator was indicated on the sterilizer front panel by a drop in chamber pressure. When this occurred, the LNH engineer communicated to the sampler to start collecting the sample from the Abator.

3.0 SAMPLING AND ANALYTICAL PROCEDURES

3.1 SAMPLING POINTS

Quarter inch tube fittings are located on the catalytic abators inlet and outlet piping.

3.2 ETHYLENE OXIDE

Ethylene oxide concentrations were determined using U.S. EPA Reference Method 18, "Measurement of Gaseous Organic Compound Emissions by Gas Chromatography." Three one-hour test runs for ethylene oxide removal efficiency were conducted on the inlet and outlet ducts of the three abators utilizing EPA Method 18.

Sample Collection. Samples were withdrawn from the sources at a constant rate using an EPA Method 18 sampling train. The sampling rate was approximately 0.12 liters per minute. The sampling train consists of a Teflon probe line, rotameter, an air tight container containing a ten-liter Tedlar bag, sample/purge valve, rotameter and a metering console with pump and vacuum gauge.

Sample Recovery. The Tedlar bag was removed from the air tight container. The bag was examined for condensation in the bag. No condensation was observed in the sample bags. The bag was then labeled and the information recorded on the chain of custody form, the bag was then stored in an opaque container until delivery to the laboratory.

Sample Analysis. Enthalpy Analytical, Inc. performed the EPA Method 18 analytical procedures. All sample bags were received by the lab in good condition, no condensation observed in the sample bags. Analysis could not be performed if condensation was observed in the sample bags.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

4.1 GENERAL

Air Monitoring Specialists, Inc. (AMS) is committed to the continued implementation of a Quality Assurance Program to assure the quality of sampling and analytical procedures of environmental measurement data. The Quality Assurance measures taken during this test project equal or exceed the minimum QA/QC recommendations as set forth by the U.S. Environmental Protection Agency (EPA) for a particular method. The following sections outline the QA program implemented by AMS to justify the validity of test

procedures. As applicable, the QA system for the various test programs addresses the following areas:

- Preventive Maintenance
- Internal/External System Checks
- Data Reduction & validation
- QA/QC Summary

4.2 PREVENTIVE MAINTENANCE

An effective preventive maintenance program decreases downtime and thus increases data completeness and quality. Pretest and posttest equipment calibrations are conducted in a manner and at a frequency, which meets or exceeds U.S. EPA specifications. Each item transported to the field is inspected to detect equipment problems that originate during periods of storage. All equipment returning from the field is cleaned, repaired, reconditioned, and recalibrated as necessary. Routine maintenance on equipment (sampling probes, heated sample lines, flow meters, and valves) is carried out periodically for leaks, corrosion, dents, or any other damage.

4.3 INTERNAL/EXTERNAL SYSTEM AUDIT CHECKS

System and performance audits are routine elements of all AMS QA/QC programs.

Internal Systems Audit: The following sampling equipment checks were conducted prior to sample collection. All sampling equipment was thoroughly checked to ensure clean and operable components.

- All sampling equipment was thoroughly checked to ensure clean and operable components.
- Equipment was inspected for possible damage from shipment.

External Systems Audits: AMS is subject to a system audit each time a test is conducted for any Air Pollution Control agency. This procedure entails an observer on-site to do qualitative evaluation of performance to demonstrate compliance with the applicable regulations.

4.4 DATA REDUCTION AND VALIDATION

The test team leader is responsible for reviewing and validating data as they are acquired. Each team leader has extensive knowledge of sampling methodology and the characteristics of the process being measured and is capable of evaluating the accuracy, representativeness, and completeness of raw data on-site. Action to replace inadequate data can be taken immediately.

Data obtained during calibrations and test runs are recorded on standardized forms that are checked twice for completeness and accuracy by the QA Director or his designated representative. Data reduction and consistency are achieved by using the standardized forms and using AMS's in-house computer facilities.

4.5 QA/QC SUMMARY

EPA Method 18: A recovery study was performed on a bag sample from each test location; the percent recovery met the requirements of section 8.4.2 except for abator AB-D inlet. The results can be found in the laboratory report in Appendix B.

Appendix A

Field Data

Appendix B

CD With Laboratory Report

Appendix C

Process Data

Air Monitoring Specialists, Inc.

22 Rodman Rd.
Richmond, VA 23224

Bayside
Abator D & E

Analytical Report
(0119-148)

EPA Method 18 (Bags)
Ethylene oxide

NELAP accredited in the State of Virginia under Laboratory ID # 460155, Certificate # 9984.

Enthalpy Analytical, LLC
Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 167 pages.

Michael Steven Schapira

QA Review Performed by: Michael Steven Schapira

Report Issued: 2/18/19

ENTHALPY ANALYTICAL

Summary of Results

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ANALYTICAL

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.
Job No.: 0119-148 - EPA Method 18 (Bags)
Client No.: Bayside - Abator D & E

Summary - Ethylene oxide

Sample ID	Adjusted Sample Concentration (ppmv)
D Outlet 1-1 (01/29/19)	1.01 J
D Inlet 1-2 (01/29/19) **	272 **
E Inlet 2-1 (01/29/19)	2,199
E Outlet 2-2 (01/29/19)	0.496 ND
D Inlet 1-1 BU (01/30/19) **	1,114 **
D Outlet 1-2 (01/30/19)	2.45 J
E Inlet 2-1 (01/30/19)	1,806
E Outlet 2-2 (01/30/19)	1.05 J
D Inlet 3-1 (01/30/19) **	541 **
D Outlet 3-2 (01/30/19)	0.559 ND
E Inlet 4-1 (01/30/19)	2,131
E Outlet 4-2 (01/30/19)	0.496 ND

** Results for these samples have NOT been adjusted as the associated Spike and Recovery did not meet the 70-130% recovery criterion.

Results

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.
Job No.: 0119-148 - EPA Method 18 (Bags)
Client No.: Bayside - Abator D & E

Sample Analysis Method Used:
A = BETTYP957_EO.M
B = GUMMOP1536F_EO.M
C = BETTYP1042_EO.M

Ethylene oxide

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (ppmv)	Conc #2 (ppmv)	Conc #3 (ppmv)	%dif conc	DF	Avg Conc (ppmv)	Spike Rec. Eff.	Adj. Conc (ppmv)	Flag
D Outlet 1-1 (01/29/19)	002F0101.D	002F0102.D	002F0103.D	B	5.13	243	0.513	3.14	3.14	3.14	0.1	0.905	0.812	1.07	15.0	1	0.928	91.8%	1.01	J
D Inlet 1-2 (01/29/19)	002F0602.D	002F0603.D	002F0701.D	B	5.13	243	0.513	3.15	3.15	3.15	0.0	13.0	12.9	13.0	0.8	21	272	100%	272	
E Inlet 2-1 (01/29/19)	006F0801.D	006F0901.D	006F0902.D	B	5.13	243	0.513	3.15	3.15	3.15	0.1	76.0	75.7	74.6	1.1	21	1,584	72.0%	2,199	
E Outlet 2-2 (01/29/19)	007F0201.D	007F0202.D	007F0203.D	B	5.13	243	0.513	NA	NA	NA	NA	0.513	0.513	0.513	0.0	1	0.513	103%	0.496	ND
D Inlet 1-1 BU (01/30/19)	022B0501.D	022B0502.D	022B0503.D	A	4.85	243	0.485	2.74	2.74	2.73	0.0	35.9	35.9	36.0	0.3	31	1,114	100%	1,114	
D Outlet 1-2 (01/30/19)	004F0301.D	004F0302.D	004F0303.D	B	5.13	243	0.513	3.14	3.14	3.14	0.0	2.38	2.36	2.00	10.9	1	2.25	91.8%	2.45	J
E Inlet 2-1 (01/30/19)	002F0501.D	002F0601.D	002F0602.D	B	5.13	243	0.513	3.14	3.14	3.14	0.1	61.7	61.9	62.3	0.6	21	1,301	72.0%	1,806	
E Outlet 2-2 (01/30/19)	006F0201.D	006F0202.D	006F0203.D	B	5.13	243	0.513	3.14	3.13	3.14	0.1	1.37	1.07	0.833	25.2	1	1.09	103%	1.05	J
D Inlet 3-1 (01/30/19)	007F1001.D	007F1002.D	007F1003.D	B	5.13	243	0.513	3.14	3.14	3.14	0.0	25.6	25.8	25.9	0.8	21	541	100%	541	
D Outlet 3-2 (01/30/19)	005F0401.D	005F0402.D	005F0403.D	B	5.13	243	0.513	NA	NA	NA	NA	0.513	0.513	0.513	0.0	1	0.513	91.8%	0.559	ND
E Inlet 4-1 (01/30/19)	005F1401.D	005F1402.D	005F1403.D	B	5.13	243	0.513	3.14	3.14	3.14	0.0	73.0	73.1	73.2	0.1	21	1,535	72.0%	2,131	
E Outlet 4-2 (01/30/19)	002F0101.D	002F0102.D	002F0103.D	B	5.13	243	0.513	NA	NA	NA	NA	0.513	0.513	0.513	0.0	1	0.513	103%	0.496	ND
D Outlet 1-2 (01/30/19) BL	002F0401.D	002F0402.D	002F0403.D	B	5.13	243	0.513	3.15	3.14	3.14	0.1	1.80	1.76	1.79	1.3	1	1.78	100.0%		J
E Inlet 4-1 (01/30/19) BL	007F0201.D	007F0202.D	007F0203.D	B	5.13	243	0.513	3.14	3.14	3.14	0.0	27.6	27.6	27.7	0.3	31	857	100.0%		
D Outlet 1-2 (01/30/19) BL SPK	007F0701.D	007F0702.D	007F0703.D	B	5.13	243	0.513	3.15	3.15	3.15	0.0	14.8	14.8	14.7	0.6	1	14.8	91.8%		
E Inlet 4-1 (01/30/19) BL SPK	007F0901.D	007F0902.D	007F0903.D	B	5.13	243	0.513	3.15	3.15	3.15	0.0	37.2	36.5	36.7	1.0	31	1,141	72.0%		
D Inlet 1-1 BU (01/30/19) SPK	019B1401.D	019B1402.D	019B1403.D	C	5.12	256	0.485	2.73	2.73	2.73	0.0	58.7	58.8	57.5	1.4	21	1,225	20.7%		
E Outlet 2-2 (01/30/19) SPK	007F0501.D	007F0502.D	007F0503.D	B	5.13	243	0.513	3.14	3.14	3.14	0.0	17.5	17.3	17.0	1.5	1	17.2	103.4%		

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Spiked Bag

	D Outlet 1-2 (01/30/19) BL SPK		Ethylene oxide
Before Spiking	Inj1 (ppmv)		1.80
	Inj2 (ppmv)		1.76
	Inj3 (ppmv)		1.79
	Avg ppmv		1.78
	Bag vol L NTP	4.77	
Gas Spike	Cylinder	CC122424	
	Expires	3/9/19	
	Press/Temp	756.7 / 68.5	
	Vol (mL)	300	
	Cyl Dil Factor	1	
	Cyl Conc (ppmv)		243
	Vol (mL NTP)	298	0.0724
Totals	Sp Bag Vol L NTP	5.07	
	Corrected Initial (ppmv)		1.68
	Spike Amount (mL NTP)		0.0724
	Spike Amount (ppmv)		14.3
	Expected (ppmv)		16.0
Result	Inj1 (ppmv)		14.8
	Inj2 (ppmv)		14.8
	Inj3 (ppmv)		14.7
	Avg (ppmv)		14.8
	Recovery		**91.8%**

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Spiked Bag

	E Inlet 4-1 (01/30/19) BL SPK		Ethylene oxide
Before Spiking	Inj1 (ppmv)		856
	Inj2 (ppmv)		854
	Inj3 (ppmv)		859
	Avg ppmv		857
	Bag vol L NTP	2.07	
Gas Spike	Cylinder	MKBF0692	
	Expires	6/5/19	
	Press/Temp	757.4 / 71.0	
	Vol (mL)	100	
	Cyl Dil Factor	101	
	Cyl Conc (ppmv)		995,000
	Vol (mL NTP)	99.1	0.976
Totals	Sp Bag Vol L NTP	2.17	
	Corrected Initial (ppmv)		817
	Spike Amount (mL NTP)		0.976
	Spike Amount (ppmv)		450
	Expected (ppmv)		1,267
Result	Inj1 (ppmv)		1,153
	Inj2 (ppmv)		1,133
	Inj3 (ppmv)		1,139
	Avg (ppmv)		1,141
	Recovery		**72.0%**

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Spiked Bag

	E Outlet 2-2 (01/30/19) SPK		Ethylene oxide
Before Spiking	Inj1 (ppmv)		1.37
	Inj2 (ppmv)		1.07
	Inj3 (ppmv)		0.83
	Avg ppmv		1.09
	Bag vol L NTP	4.35	
Gas Spike	Cylinder	CC122424	
	Expires	3/9/19	
	Press/Temp	764.8 / 70.0	
	Vol (mL)	300	
	Cyl Dil Factor	1	
	Cyl Conc (ppmv)		243
	Vol (mL NTP)	301	0.0730
Totals	Sp Bag Vol L NTP	4.65	
	Corrected Initial (ppmv)		1.02
	Spike Amount (mL NTP)		0.0730
	Spike Amount (ppmv)		15.7
	Expected (ppmv)		16.7
Result	Inj1 (ppmv)		17.5
	Inj2 (ppmv)		17.3
	Inj3 (ppmv)		17.0
	Avg (ppmv)		17.2
	Recovery		**103%**

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Spiked Bag

	D Inlet 1-1 BU (01/30/19) SPK		Ethylene oxide
Before Spiking	Inj1 (ppmv)		1,113
	Inj2 (ppmv)		1,112
	Inj3 (ppmv)		1,117
	Avg ppmv		1,114
	Bag vol L NTP	1.94	
Gas Spike	Cylinder	MKBF0692	
	Expires	6/5/19	
	Press/Temp	756.7 / 68.5	
	Vol (mL)	40.0	
	Cyl Dil Factor	31.0	
	Cyl Conc (ppmv)		995,000
	Vol (mL NTP)	39.8	1.28
Totals	Sp Bag Vol L NTP	1.98	
	Corrected Initial (ppmv)		1,092
	Spike Amount (mL NTP)		1.28
	Spike Amount (ppmv)		644
	Expected (ppmv)		1,736
Result	Inj1 (ppmv)		1,233
	Inj2 (ppmv)		1,234
	Inj3 (ppmv)		1,208
	Avg (ppmv)		1,225
	Recovery		**20.7%**

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Spike Hold Times

Spiked Bag	Time Spiked	Spike Analyzed	Hold Time (Hours)	Related Bag	Related Bag Sampled Date	Bag Analyzed	Hold Time (Hours)
r013119 D Outlet 1-2 BL SP	02-04-2019 09:30	02-05-2019 12:59	27.5	r013019 D Outlet 1-1	01-29-2019 14:03	01-30-2019 10:25	20.4
				r013119 D Outlet 1-2	01-30-2019 09:41	01-31-2019 11:05	25.4
				r013119 D Outlet 3-2	01-30-2019 12:36	01-31-2019 11:53	23.3
r013119 E Inlet 4-1 BL SP	02-04-2019 10:34	02-05-2019 14:32	28.0	r013019 E Inlet 2-1	01-29-2019 14:44	01-30-2019 14:05	23.4
				r013119 E Inlet 2-1	01-30-2019 12:36	01-31-2019 12:30	23.9
				r013119 E Inlet 4-1	01-30-2019 12:18	01-31-2019 15:58	27.7
r013119 E Outlet 2-2 SP	01-31-2019 14:59	02-01-2019 15:46	24.8	r013019 E Outlet 2-2	01-29-2019 14:44	01-30-2019 11:02	20.3
				r013119 E Outlet 2-2	01-30-2019 12:36	01-31-2019 10:18	21.7
				r013119 E Outlet 4-2	01-30-2019 12:18	01-31-2019 09:30	21.2
r013119 IN D 1-1 BU SP	02-07-2019 10:40	02-15-2019 11:13	192.6	r013019 D Inlet 1-2	01-29-2019 14:03	01-30-2019 13:49	23.8
				r013119 D Inlet 3-1	01-30-2019 12:36	01-31-2019 13:45	25.2
				r013119 IN D 1-1 BU	01-30-2019 09:41	02-07-2019 09:31	191.8

Narrative Summary

ENTHALPY ANALYTICAL

Enthalpy Analytical Narrative Summary

Company	Air Monitoring Specialists, Inc.
Job #	0119-149 - EPA Method 18 (Bags)
Client #	Bayside – Abator D & E

Custody

David Myers received four samples on 1/30/19 and Matthew St. Lawrence received eight bags on 1/31/19 after being relinquished by Air Monitoring Specialists, Inc. All bags were received at ambient temperature. The back-up bags received on 1/30/19 and all the bags received on 1/31/19 were received with low volume.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for ethylene oxide using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. Ethylene oxide was referenced to certified gas phase standards.

The analyses were performed using the Agilent Technologies Model 6890N, Gas Chromatograph "Betty" (S/N US10430048) and the Agilent Technologies Model 6890, Gas Chromatograph "Gummo" (S/N US00028451). Both instruments were equipped with Flame Ionization Detectors (FIDs).

Calibration

The calibration curves are located in the Raw Data section of this report and referenced in the Analysis Method column on the Detailed Results page.

For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

ENTHALPY
ANALYTICAL

Enthalpy Analytical Narrative Summary
(continued)

Chromatographic Conditions	Copies of the acquisition methods (AQ_GUMMOP1466.M AQ_GUMMOP1466_AA.M, GC142P133_SHORT.M, and GC142P133_CAL.M) are included in the Raw Data section of this report.
QC Notes	The analyses of the laboratory method blanks did not contain ethylene oxide at concentrations greater than the detection limit. As required by the method, a spike and recovery study was performed on one of the samples from each source. Bag ***E Outlet 2-2 (01/30/19)*** was spiked on 1/31/19 at 2:59 PM, bag ***D Outlet 1-2 (01/30/19)*** was spiked on 2/4/19 at 9:30 AM, bag ***E Inlet 4-1 (01/30/19)*** was spiked on 2/4/19 at 10:34AM, and bag ***D Inlet 1-1 (01/30/19) BU*** was spiked on 2/7/19 at 10:40 AM.. All recovery efficiency values met the method-required limits of 70 to 130%, except for ***D Inlet 1-1 (01/30/19) BU***. The passing recovery efficiency values were used to adjust the associated sample results following equation 18-7 of Method 18. The ***D Inlet*** samples results are reported as measured, without adjustment since their S&R did not meet criteria.
Reporting Notes	These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above. The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.
- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.
- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.
- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.
- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.
- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.
- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).
- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.
- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

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General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

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Sample Custody

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Chain of Custody Record

ENTHALPY analytical, inc.

Page 1 of 1

Special Handling:
- ☐ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time -- Date Needed_____
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Monitoring Specialists, Inc.
Project Manager: Bruce Gerber
Report To: Bruce Gerber

Project Number:
Site Name: Bayside
Location: Ebenezer DEE

PO#: LFH 0119
Telephone#: (804) 231-3043
Email: ams@airmonitoringspecialists.com

For spiked or duplicate samples: please provide sample volumes for recovery calculations.
For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions:

A=Air 1=H2SO4 2=NaOH 3=_____ 4=_____
X=XAD C=Charcoal SG=Silica Gel
G=Grab C=Composite Q=Quality Control

	Sample ID	Date	Time	Sample Volume	Type	Matrix	# of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Analyses: Ethylene Oxide	Notes:
	1-1	1/29/19	14:03	10L	C	A				1				1	
	1-2	1/29/19	14:03	10L	C	A				1				1	
	2-1	1/29/19	14:44	10L	C	A				1				1	
	2-2	1/29/19	14:44	10L	C	A				1				1	
☆	1-1 D	1/29/19	14:03	5L	C	A				1				1	Duplicate
☆	1-2 D	1/29/19	14:03	5L	C	A				1				1	Duplicate
☆	2-1 D	1/29/19	14:44	5L	C	A				1				1	Duplicate
☆	2-2 D	1/29/19	14:44	5L	C	A				1				1	Duplicate

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
[signature]	1/29/19	[signature]	1-30-19	9:30AM	☐ Iced ☑ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____

800-1 Capitola Drive • Durham, NC 27713 • (919) 850-4392 • FAX (919) 850-9012 • www.enthalpy.com

Ambient temp
☆ Received with low volume

DSM 1-30-19

Chain of Custody Record

ENTHALPY analytical, inc.

Page 1 of 2

Special Handling:
- ☐ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time – Date Needed_____
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Monitoring Specialists, Inc.
Project Manager: Bruce Gerber
Report To: Bruce Gerber

Project Number:
Site Name: Bay Side
Location: ABator DEF

PO#: LFH 0119
Telephone#: (804) 231-3043
Email: ams@airmonitoringspecialists.com

For spiked or duplicate samples: please provide sample volumes for recovery calculations.
For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions:

A=Air 1=H2SO4 2=NaOH 3=_____ 4=_____
X=XAD C=Charcoal SG=Silica Gel
G=Grab C=Composite Q=Quality Control

	Sample ID	Date	Time	Sample Volume	Type	Matrix	Sample Containers: # of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Analyses: Ethylene Oxide							Notes:
★	1-1 D inlet	1/30/19	9:41	10L	C	A				1				X							
	1-2 D outlet	1/30/19	9:41	10L	C	A				1				X							
	2-1 E inlet	1/30/19	9:34	10L	C	A				1				X							
	2-2 E outlet	1/30/19	9:34	10L	C	A				1				X							
	3-1 D inlet	1/30/19	12:36	10L	C	A				1				X							
	3-2 D outlet	1/30/19	12:36	10L	C	A				1				X							
	4-1 E inlet	1/30/19	12:18	10L	C	A				1				X							
	4-2 E outlet	1/30/19	12:18	10L	C	A				1				X							

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
Phillip Gerber	1/30/19	Matt St. Laurent	1/31/19	8:00am	☐ Iced ☑ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____

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Good condition MST 1/31/19
Ambient temp

★ = All Bags received at low pressure
MST 1/31/19

Chain of Custody Record

ENTHALPY analytical, inc.

Page 2 of 2

Special Handling:
- ☐ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time – Date Needed_____
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Monitoring Specialists, Inc.
Project Manager: Bruce Gerber
Report To: Bruce Gerber

Project Number:
Site Name: Bay Side
Location: Abington D E F

PO#: LFH 0119
Telephone#: (804) 231-3043
Email: ams@airmonitoringspecialists.com

For spiked or duplicate samples: please provide sample volumes for recovery calculations.
For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions:

A=Air 1=H2SO4 2=NaOH 3=_____ 4=_____
X=XAD C=Charcoal SG=Silica Gel
G=Grab C=Composite Q=Quality Control

Sample ID	Date	Time	Sample Volume	Type	Matrix	Sample Containers: # of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Analyses: Ethylene Oxide	Notes:
1-1D	1/30/19	9:41	5L	C	A				1				X	Duplicate
1-2D	1/30/19	9:41	5L	C	A				1				X	Duplicate
2-1D	1/30/19	9:34	5L	C	A				1				X	Duplicate
2-2D	1/30/19	9:34	5L	C	A				1				X	Duplicate
3-1D	1/30/19	12:36	5L	C	A				1				X	Duplicate
3-2D	1/30/19	12:36	5L	C	A				1				X	Duplicate
4-1D	1/30/19	12:18	5L	C	A				1				X	Duplicate
4-2D	1/30/19	12:18	5L	C	A				1				X	Duplicate

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
Phillip Senker	1/30/19	Matt St. Laurent	1/31/19	8:00am	☐ Iced ☑ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____
					☐ Iced ☐ Ambient ☐ °C_____

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Good condition MST 1/31/19
Ambient temp

EA Job # 0119-148 Page 20 of 167

All Samples received At low Volume.
MST 1/31/19

Raw Data

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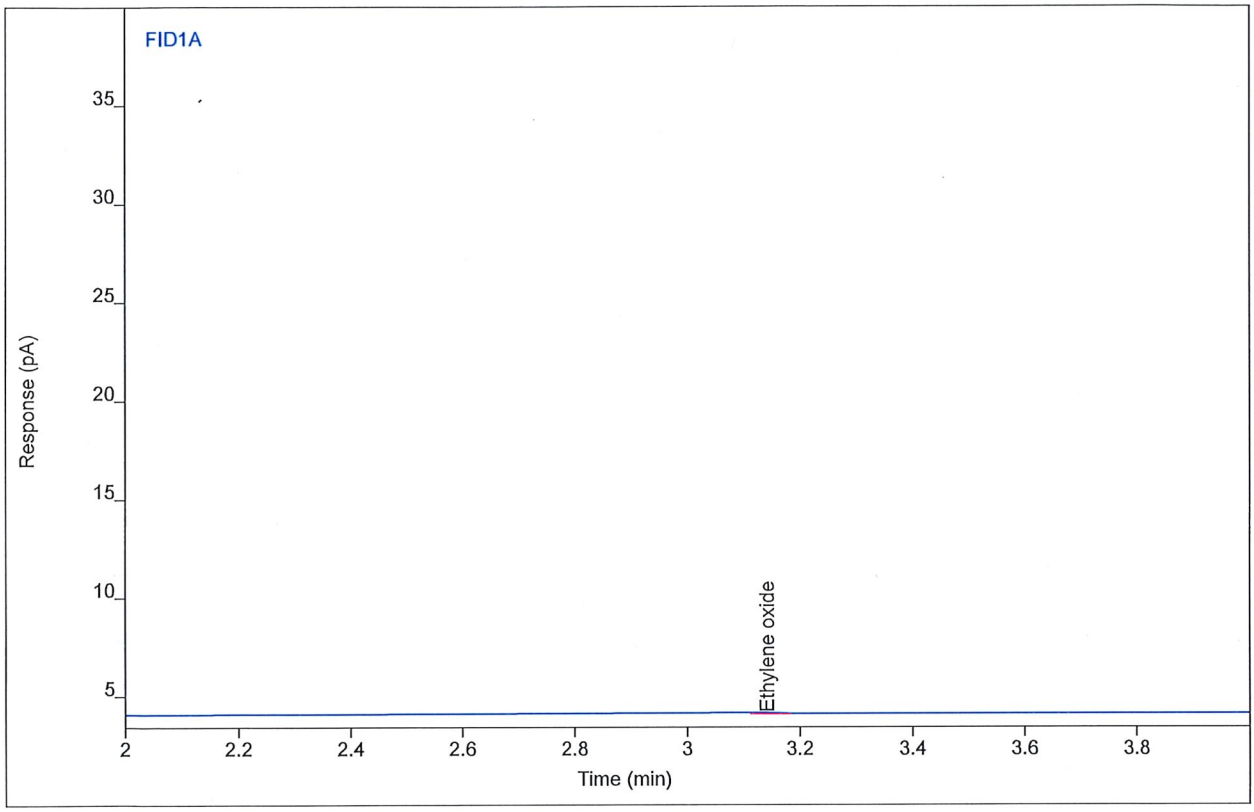
Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013019 D Outlet 1-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0101.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 10:25 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.17186	0.08095	0.90491	1	0.90491	ppm

Analyst Peak Integration Comments

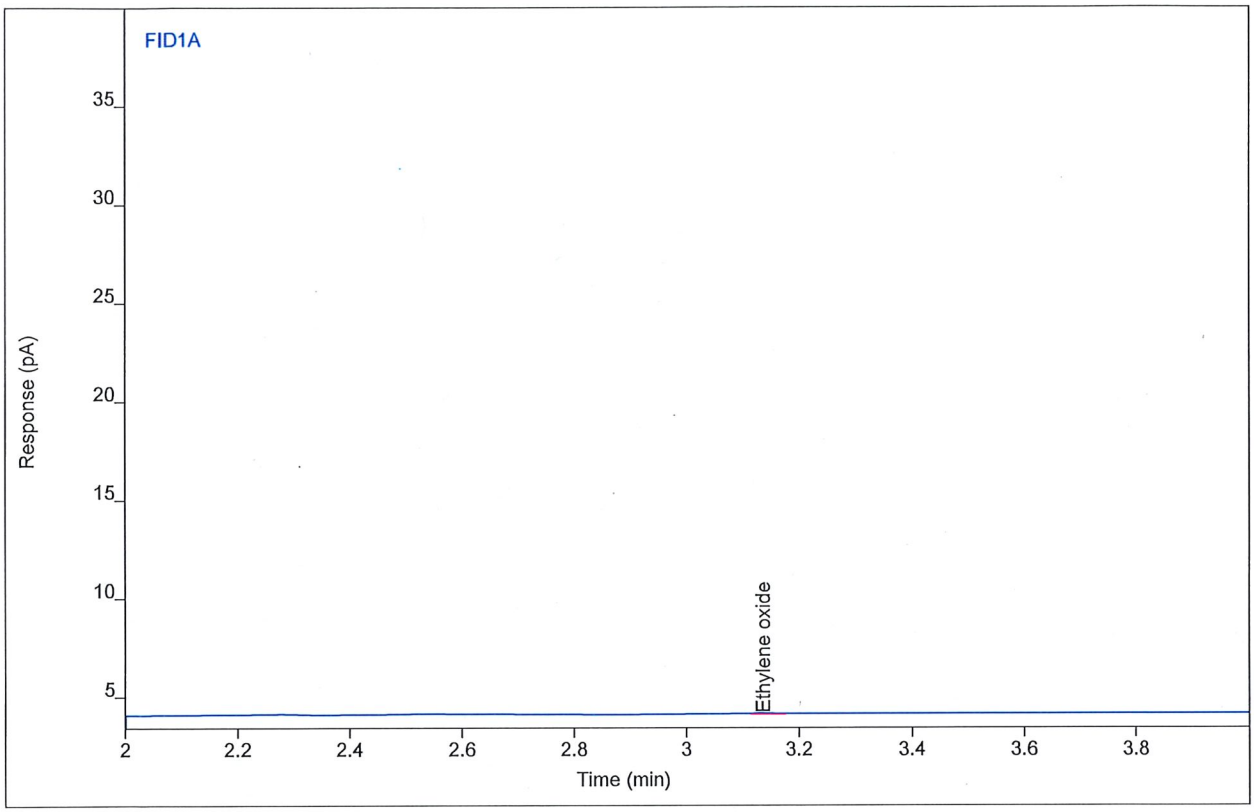
12:55:14 01/30/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013019 D Outlet 1-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0102.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 10:41 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.15417	0.06644	0.81177	1	0.81177	ppm

Analyst Peak Integration Comments

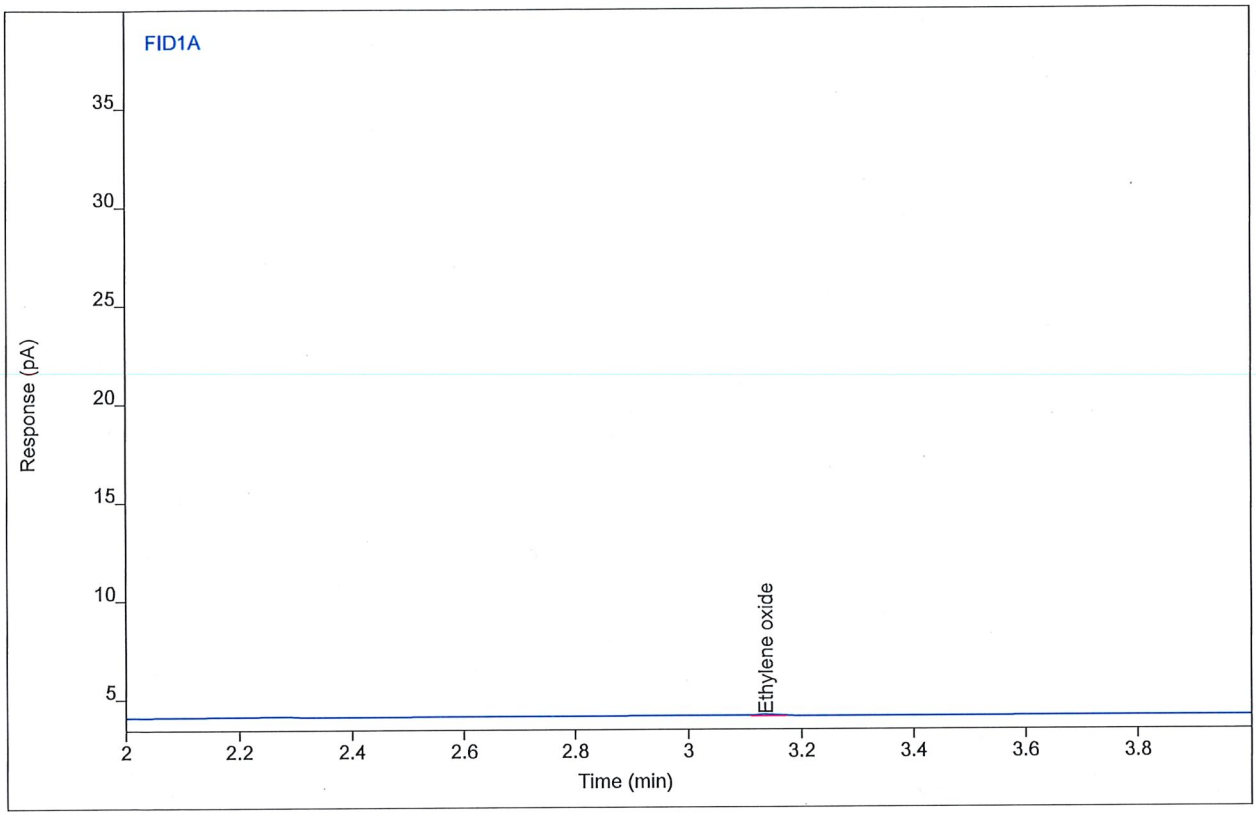
13:26:33 02/01/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013019 D Outlet 1-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0103.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 10:53 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.20266	0.08337	1.06709	1	1.06709	ppm

Analyst Peak Integration Comments

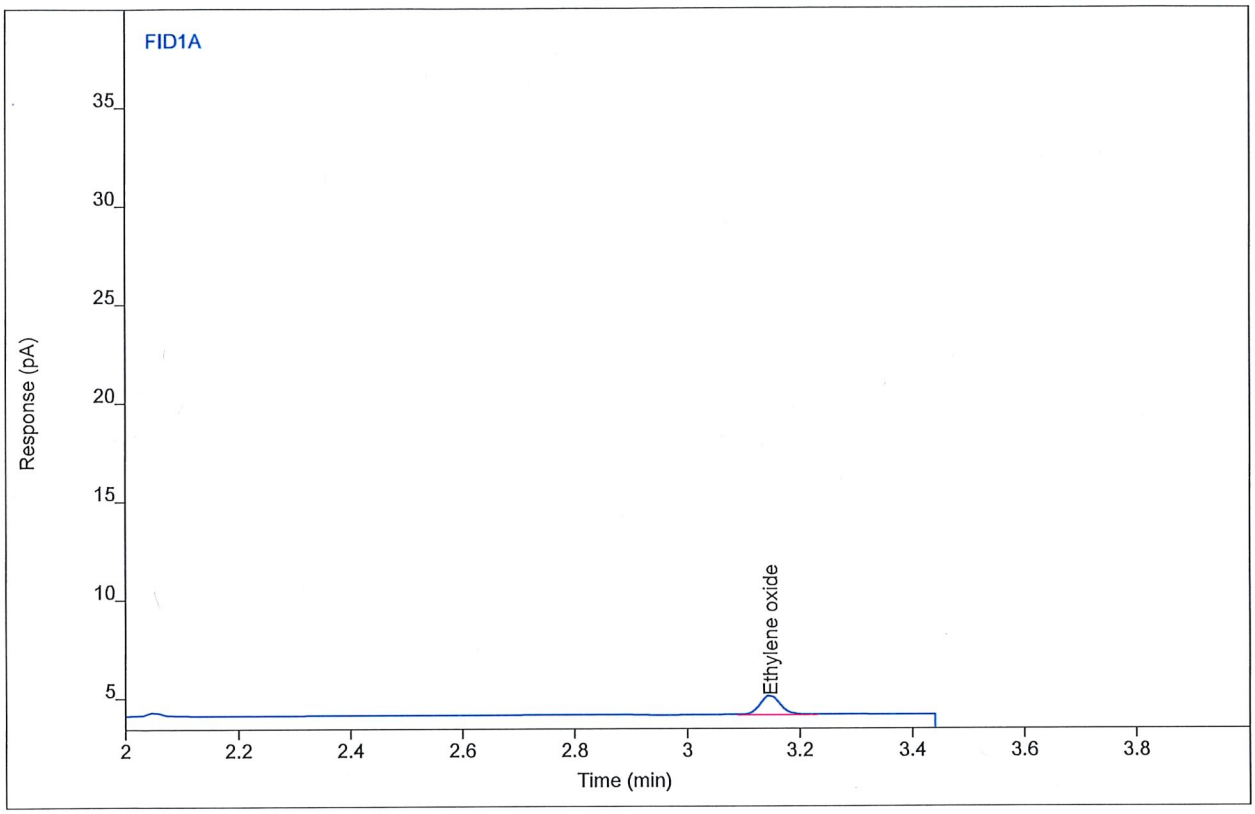
13:26:52 02/01/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013019 D Inlet 1-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0602.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 1:49 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



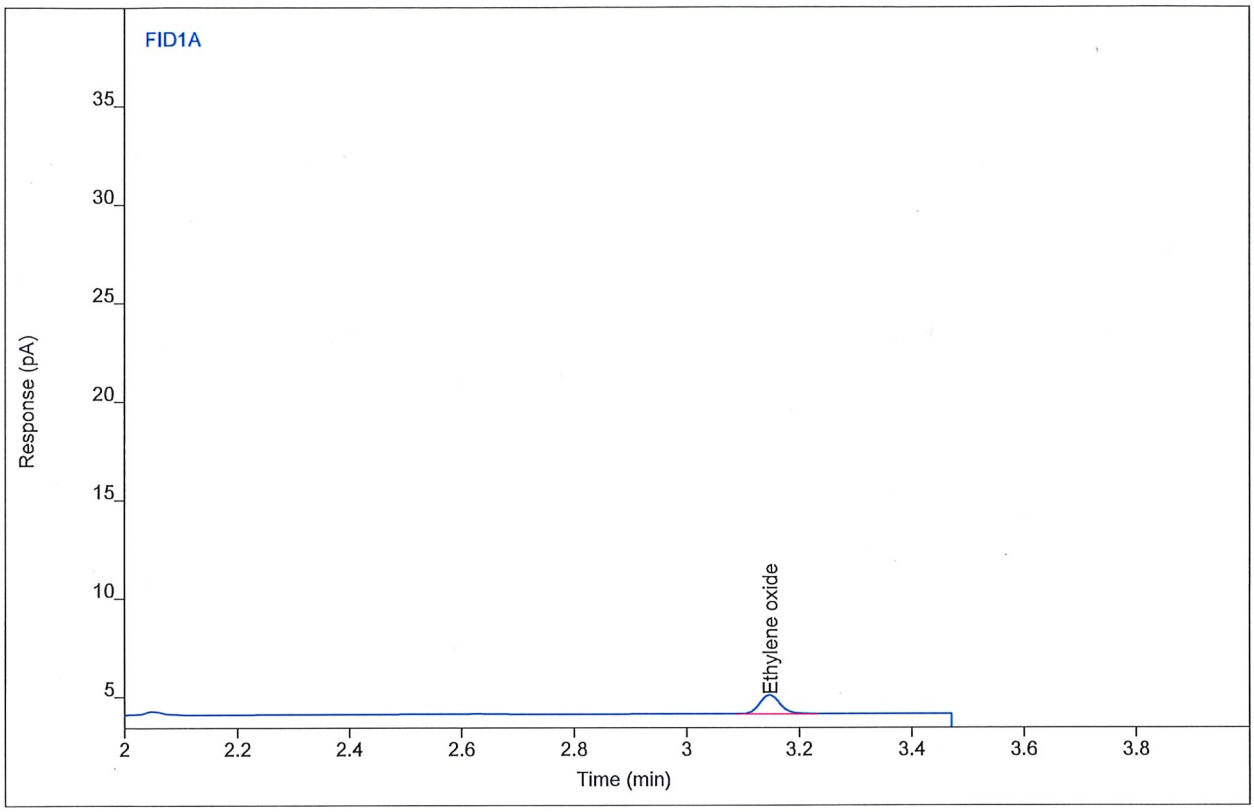
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.50066	0.91992	13.0463	21	273.972	ppm

Chromatogram Report

Sample Name	0119-148.r013019 D Inlet 1-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0603.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 1:54 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



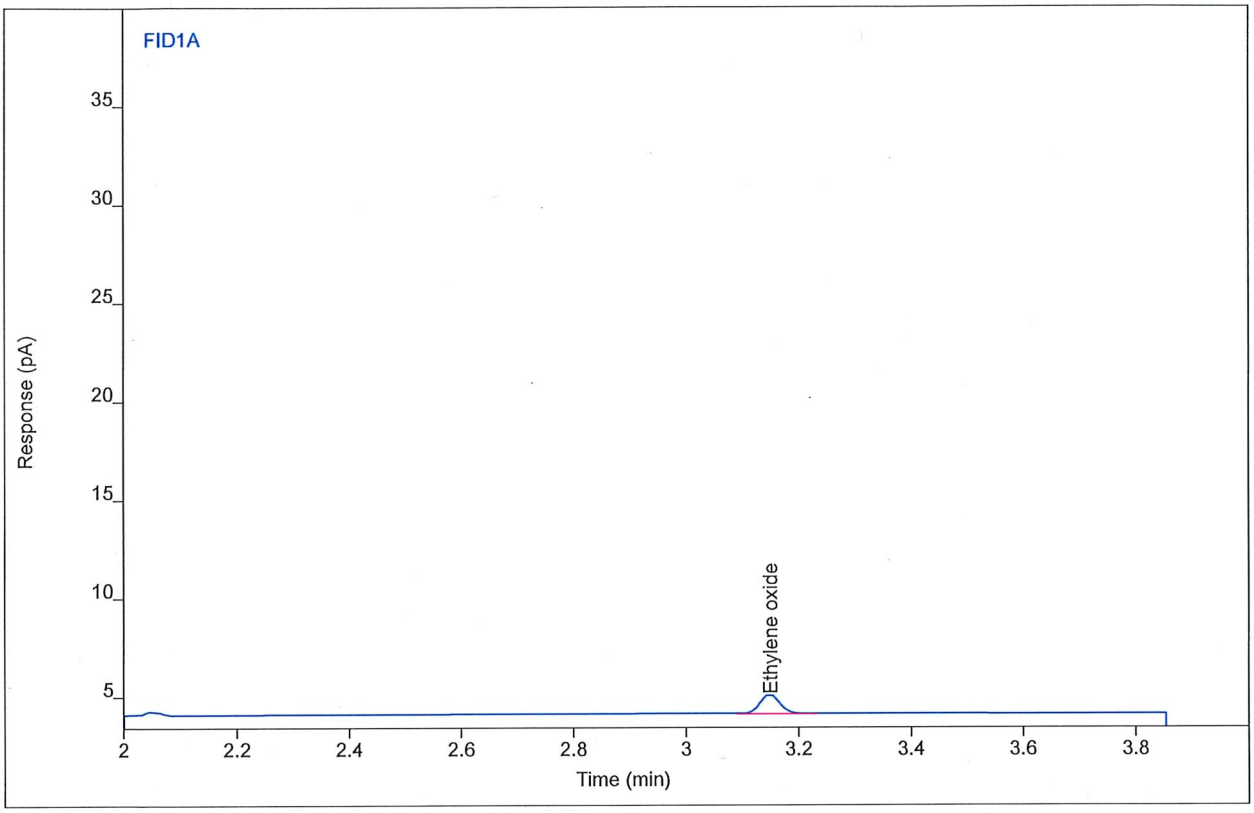
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.46476	0.92319	12.8602	21	270.063	ppm

Chromatogram Report

Sample Name	0119-148.r013019 D Inlet 1-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	002F0701.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 1:59 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	1 of 1
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



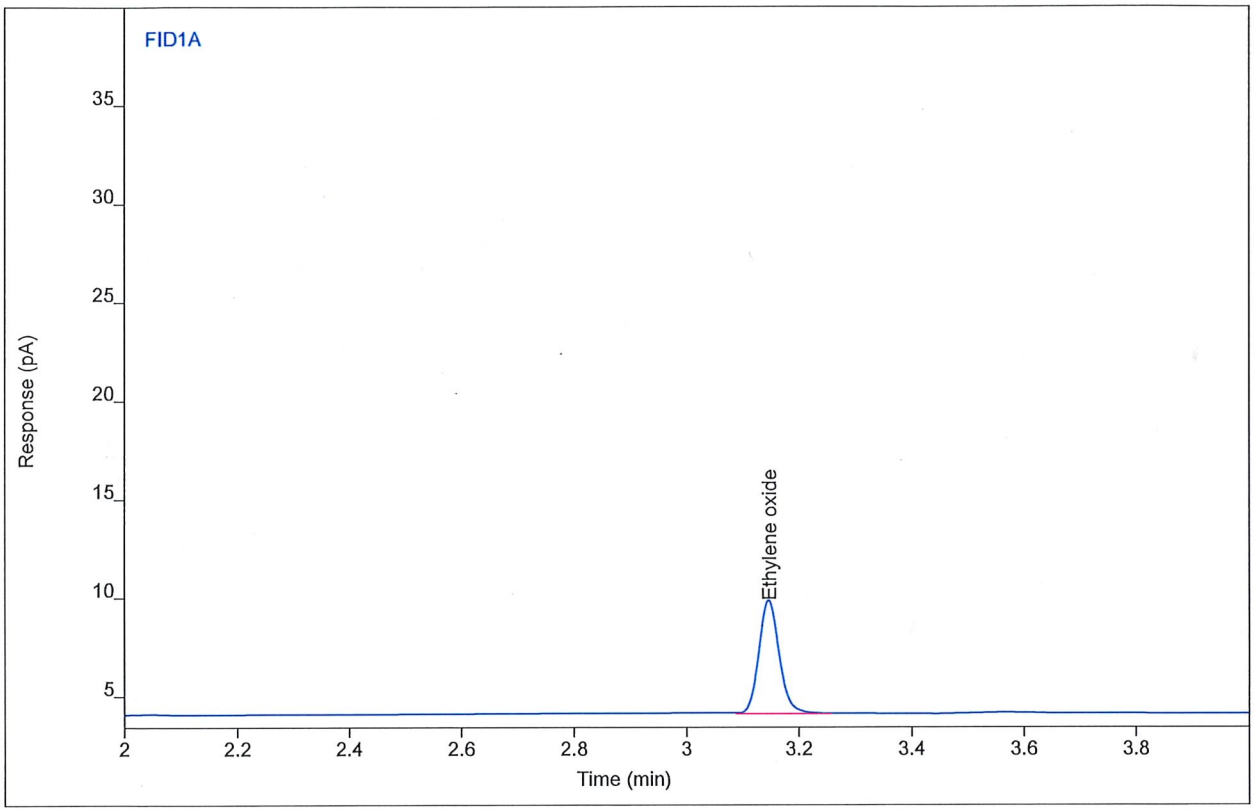
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.48541	0.94276	12.9672	21	272.312	ppm

Chromatogram Report

Sample Name	0119-148.r013019 E Inlet 2-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	006F0801.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 2:05 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	1 of 1
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



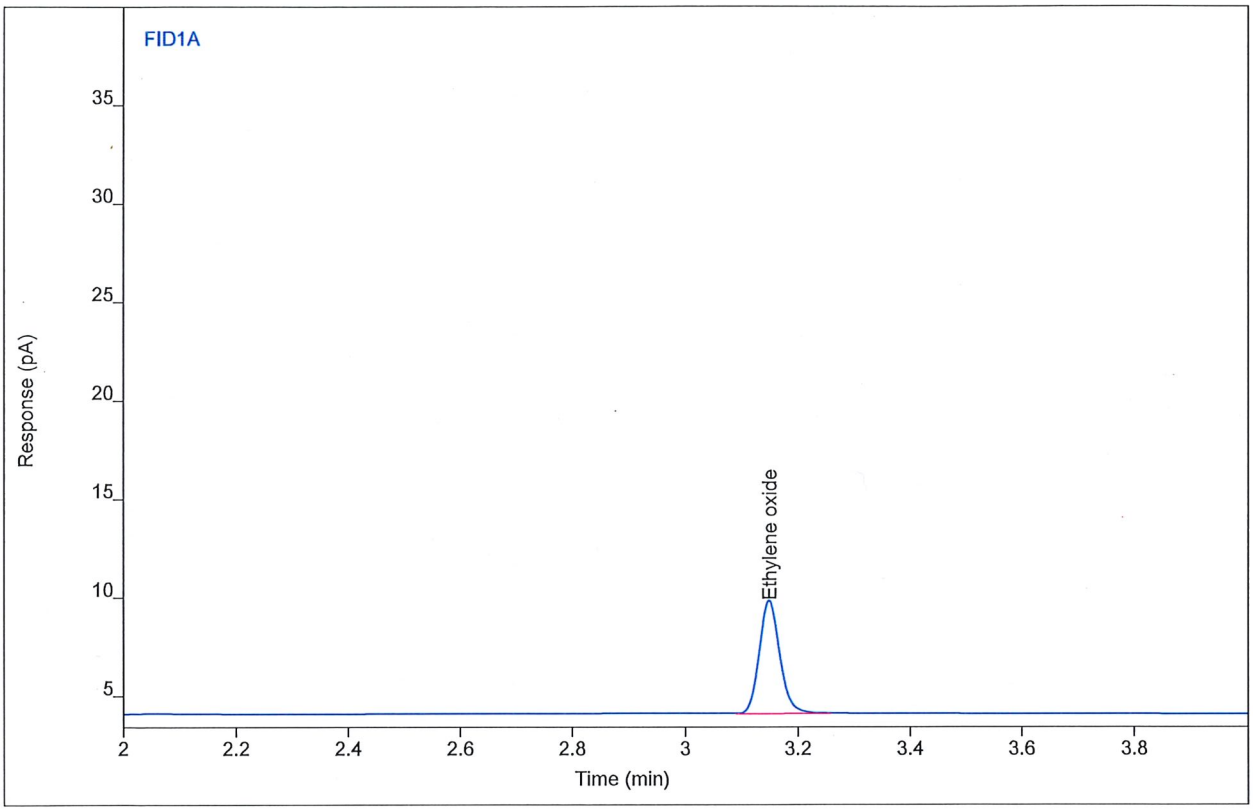
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	14.6385	5.43746	75.9976	21	1595.95	ppm

Chromatogram Report

Sample Name	0119-148.r013019 E Inlet 2-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	006F0901.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 2:11 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	1 of 2
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



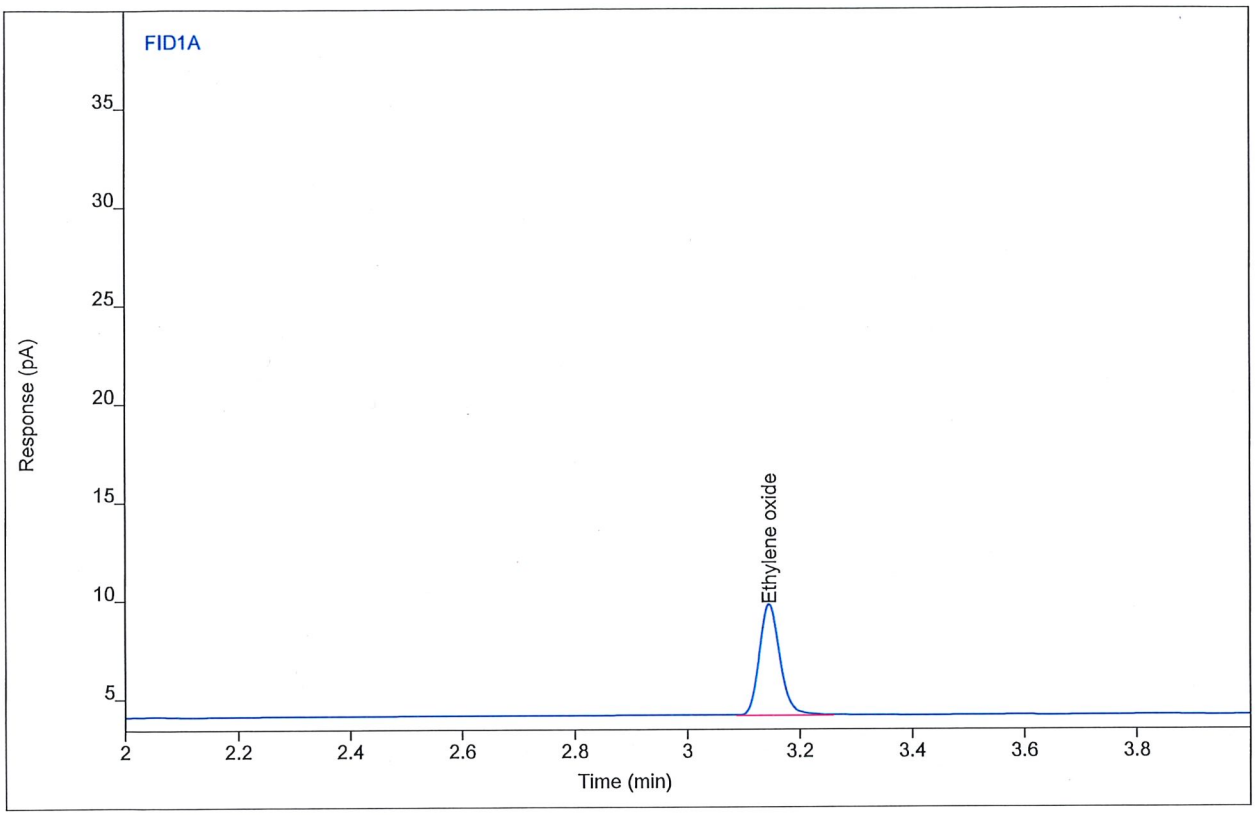
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	14.5747	5.51740	75.6666	21	1589.00	ppm

Chromatogram Report

Sample Name	0119-148.r013019 E Inlet 2-1.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	006F0902.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 2:27 PM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	2 of 2
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



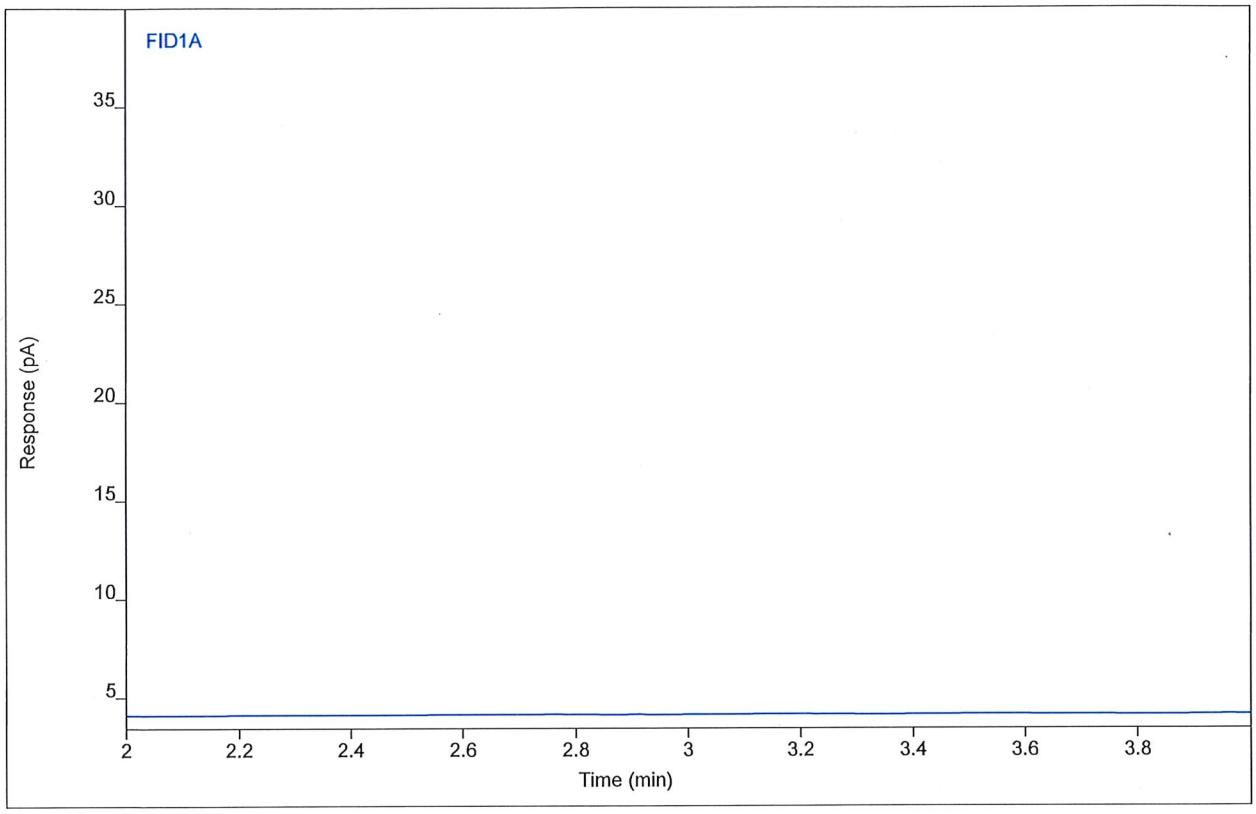
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	14.3696	5.26840	74.6032	21	1566.67	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013019 E Outlet 2-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	007F0201.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 11:02 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



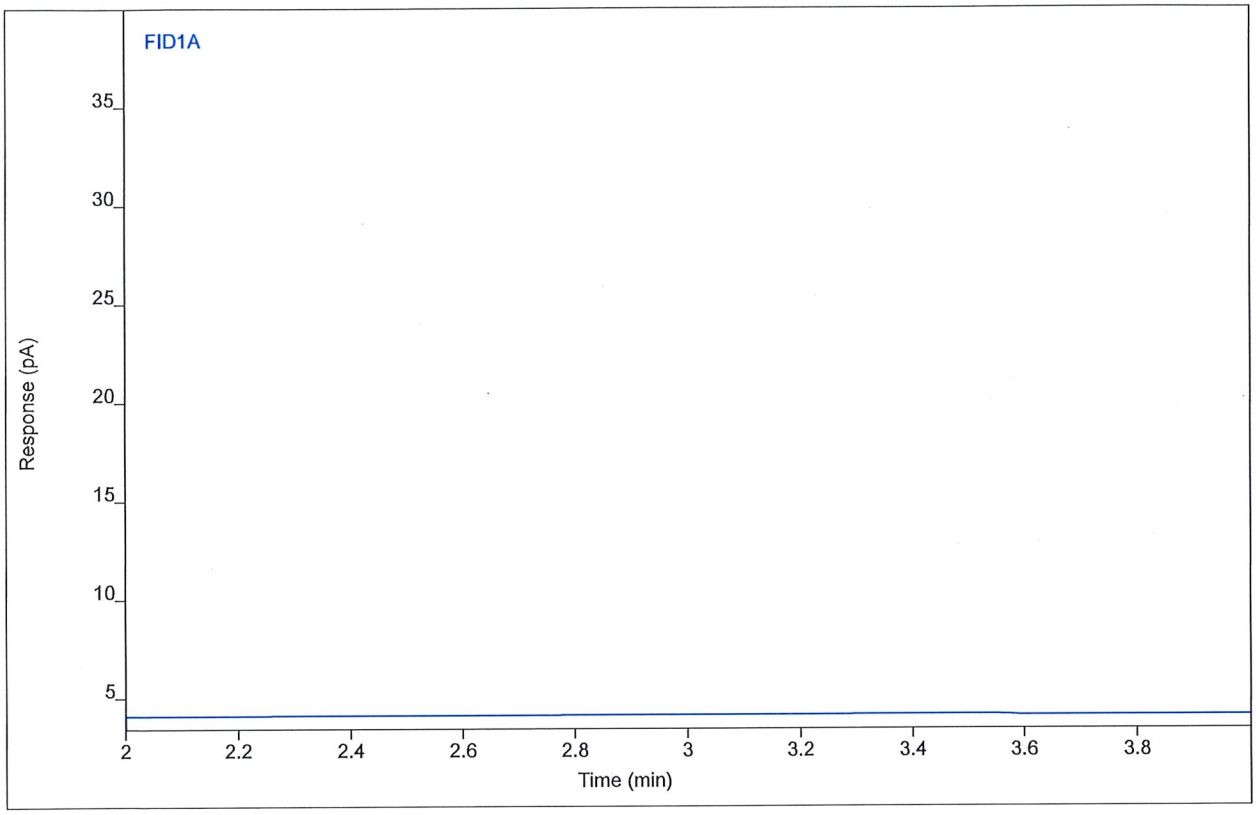
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013019 E Outlet 2-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	007F0202.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 11:11 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



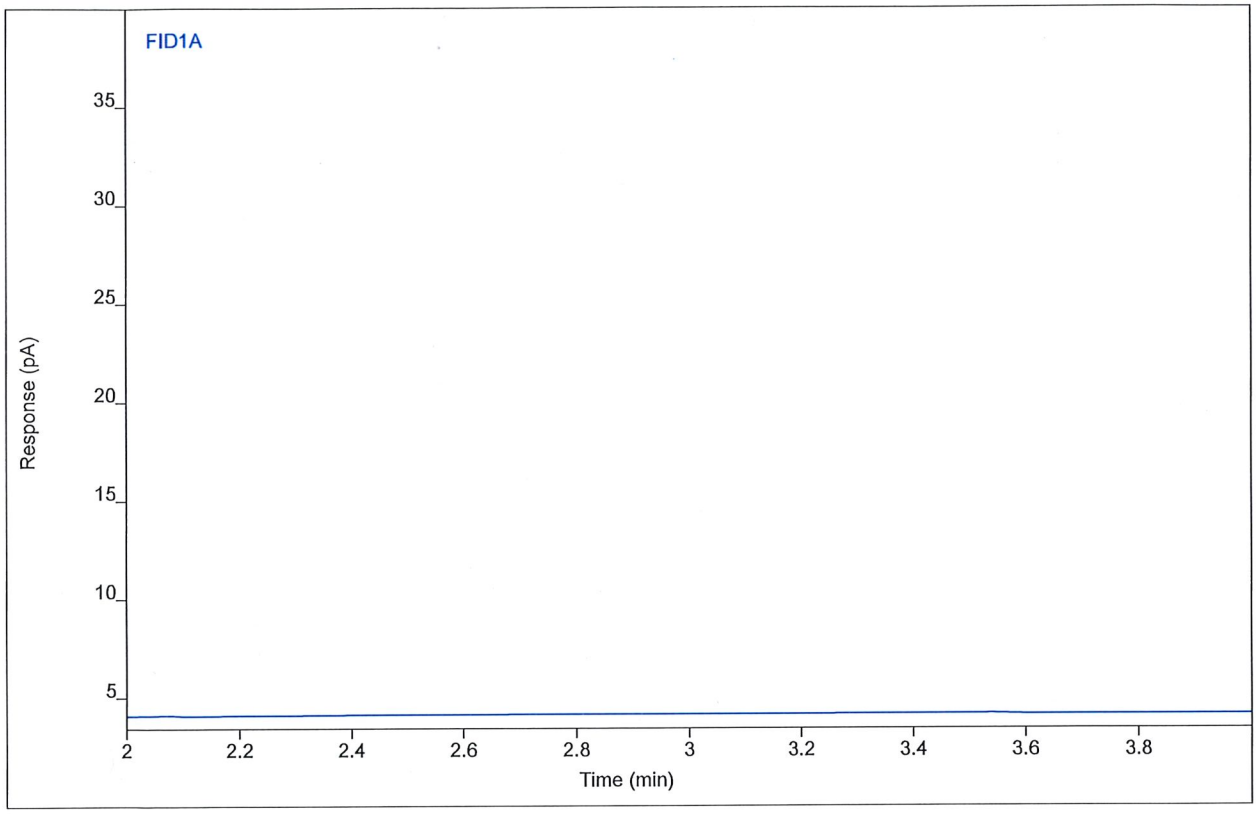
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013019 E Outlet 2-2.Bag
Sequence Name	GUMMOP1537 ver.8
Inj Data File	007F0203.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 11:27 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



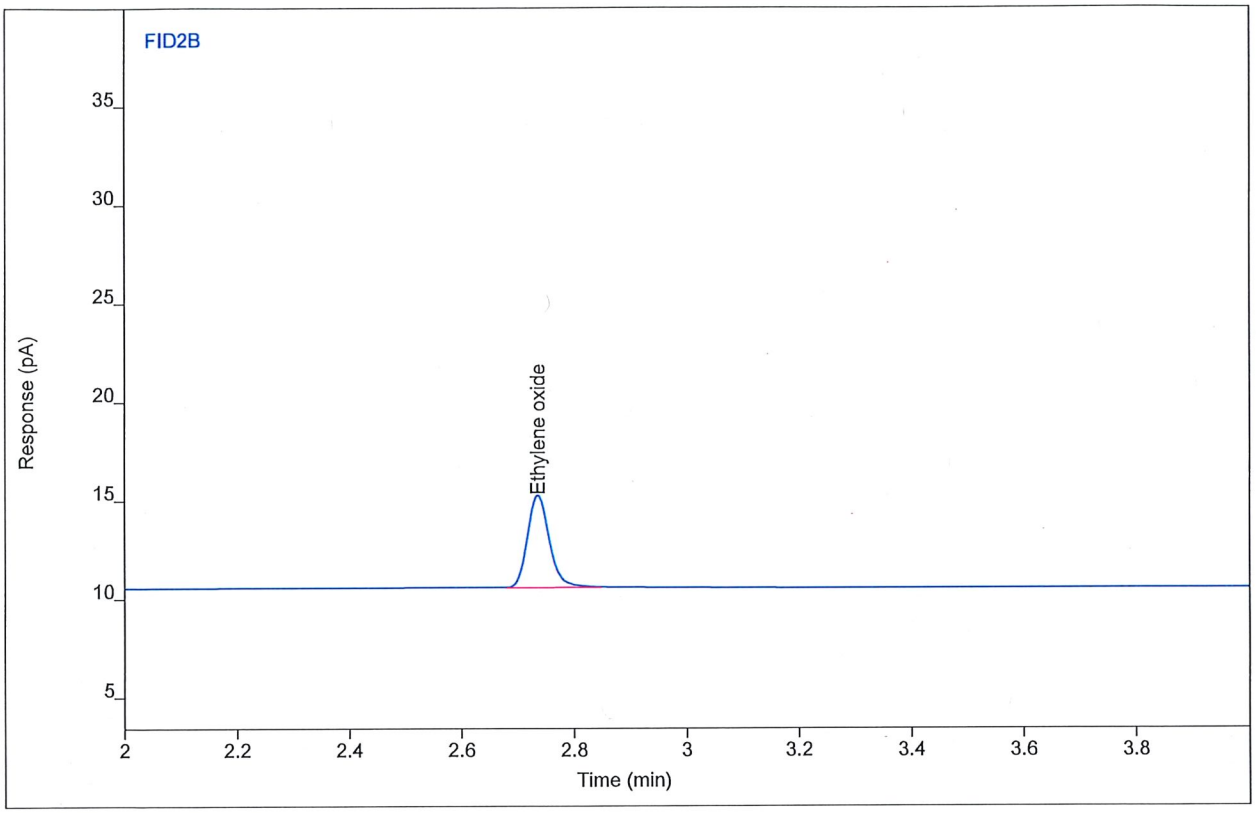
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU.Bag
Sequence Name	BETTYP1029 ver.3
Inj Data File	022B0501.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 9:31 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 22
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



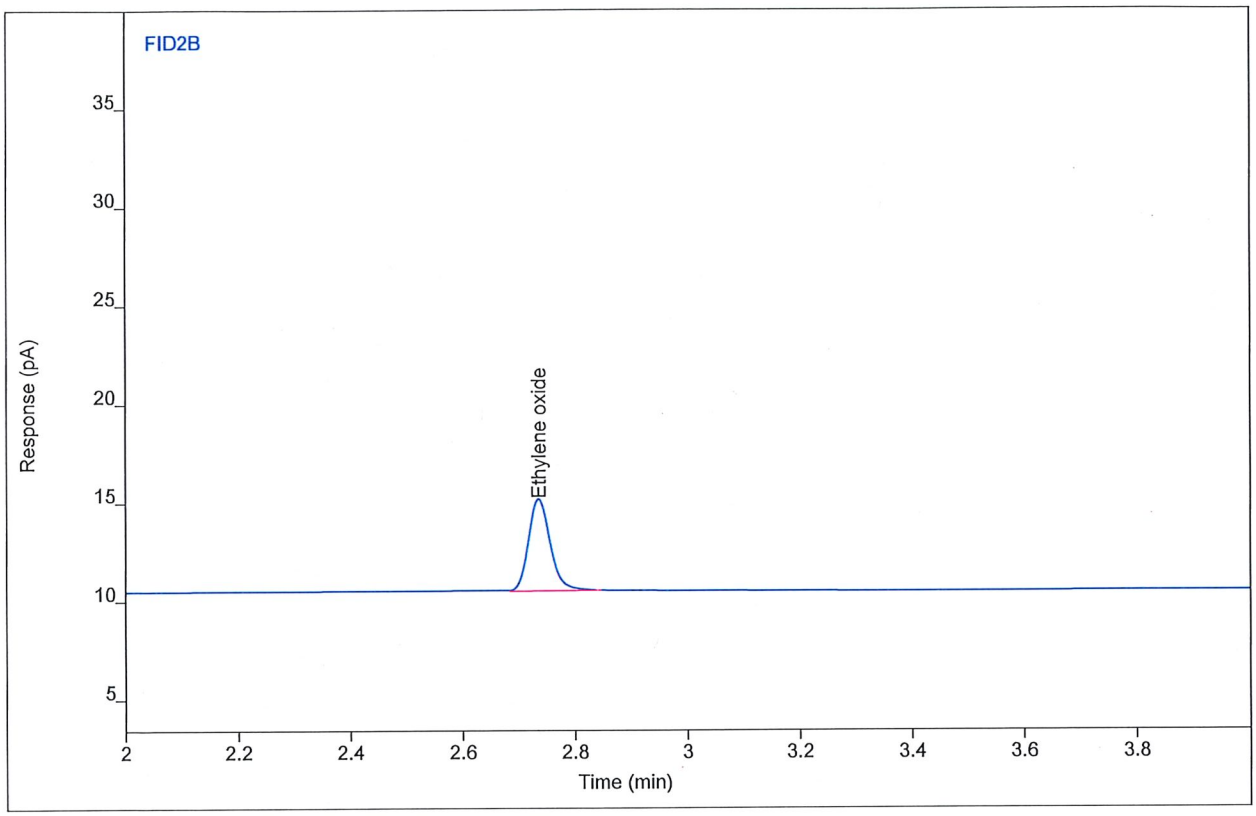
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	2.74	12.6070	4.69834	35.9046	31	1113.04	ppm

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU.Bag
Sequence Name	BETTYP1029 ver.3
Inj Data File	022B0502.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 9:38 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 22
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



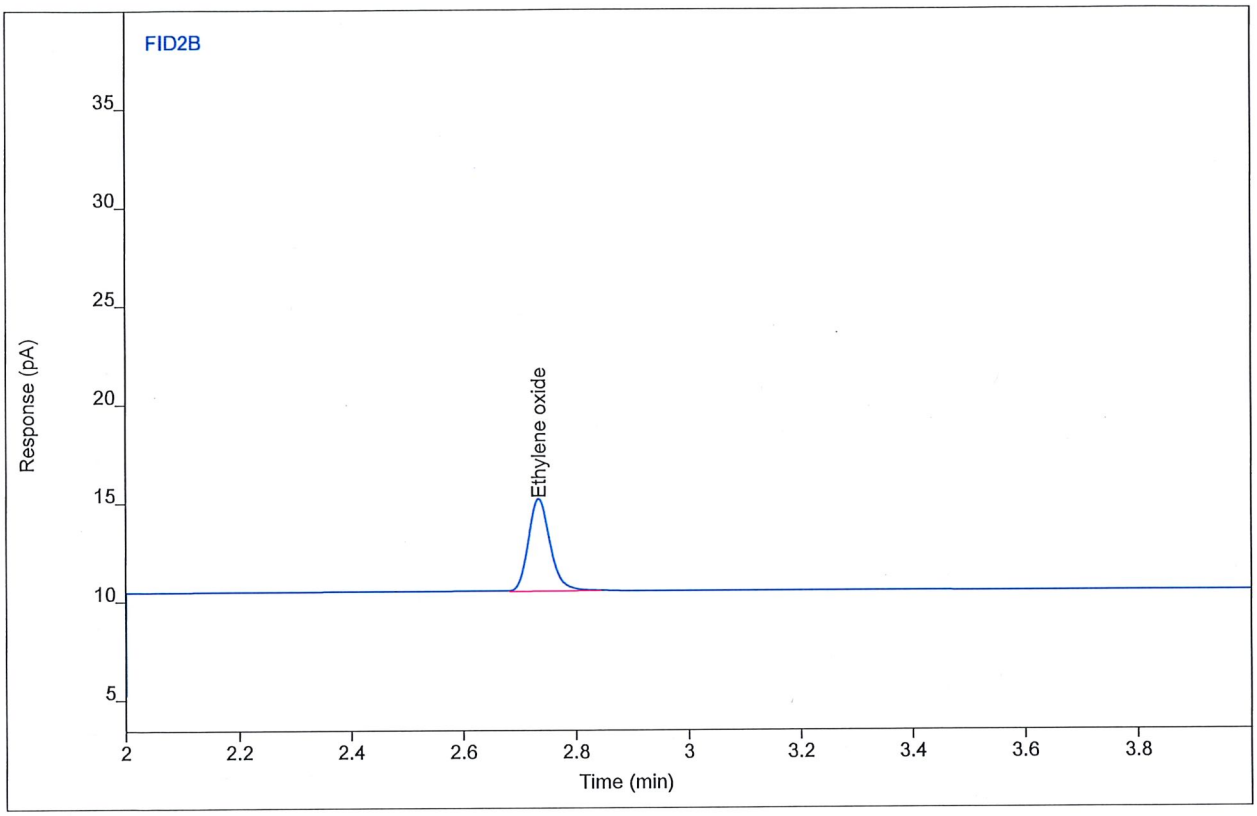
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	12.5974	4.66886	35.8772	31	1112.19	ppm

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU.Bag
Sequence Name	BETTYP1029 ver.3
Inj Data File	022B0503.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 9:53 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 22
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



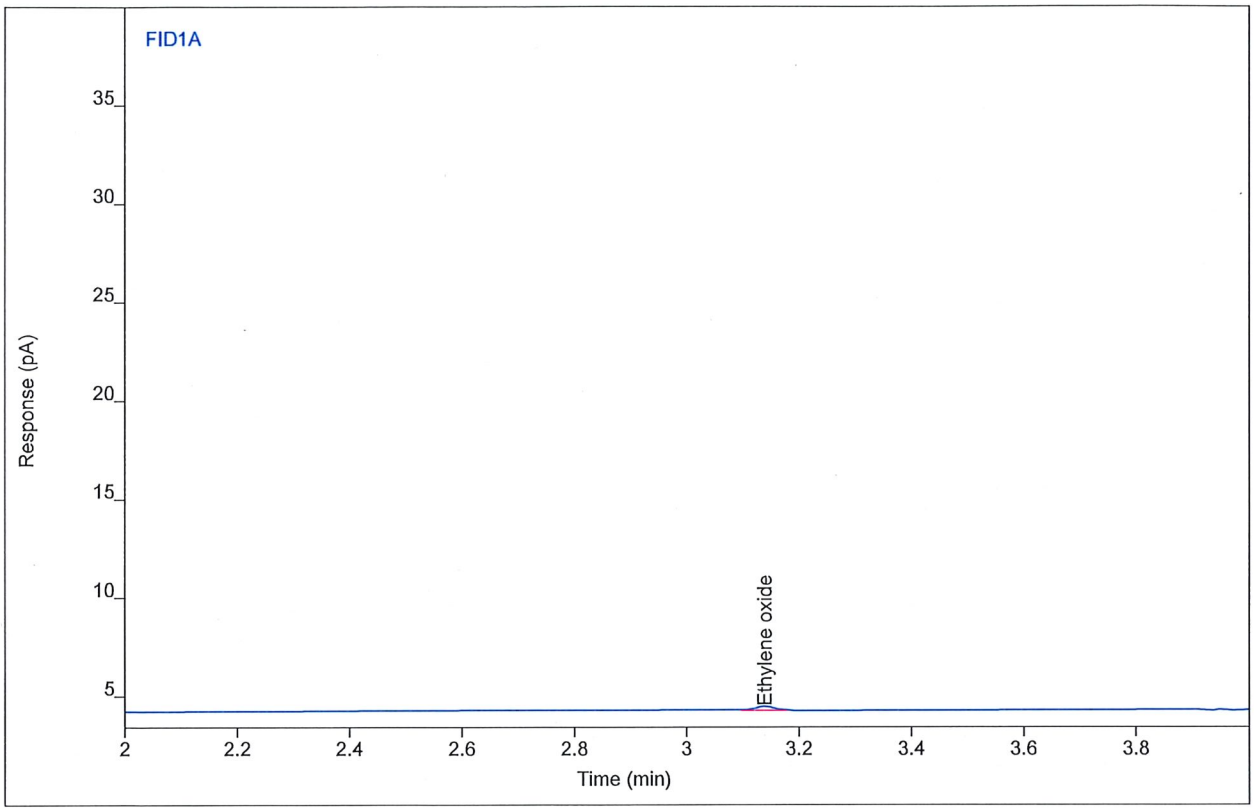
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	12.6563	4.70221	36.0447	31	1117.39	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	004F0301.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 11:05 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 4
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.45199	0.20755	2.37990	1	2.37990	ppm

Analyst Peak Integration Comments

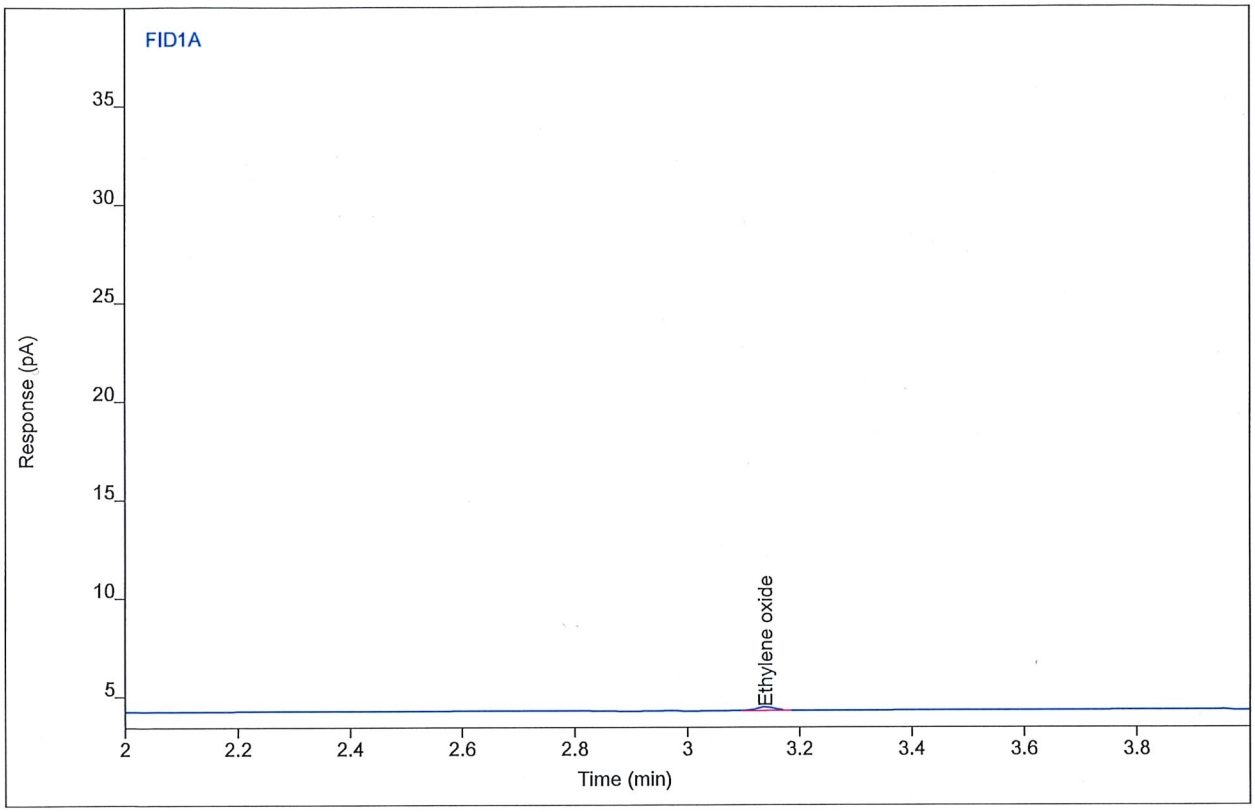
13:49:09 01/31/19 Justin Guenzler II - Baseline

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	004F0302.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 11:21 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 4
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.44768	0.20583	2.35721	1	2.35721	ppm

Analyst Peak Integration Comments

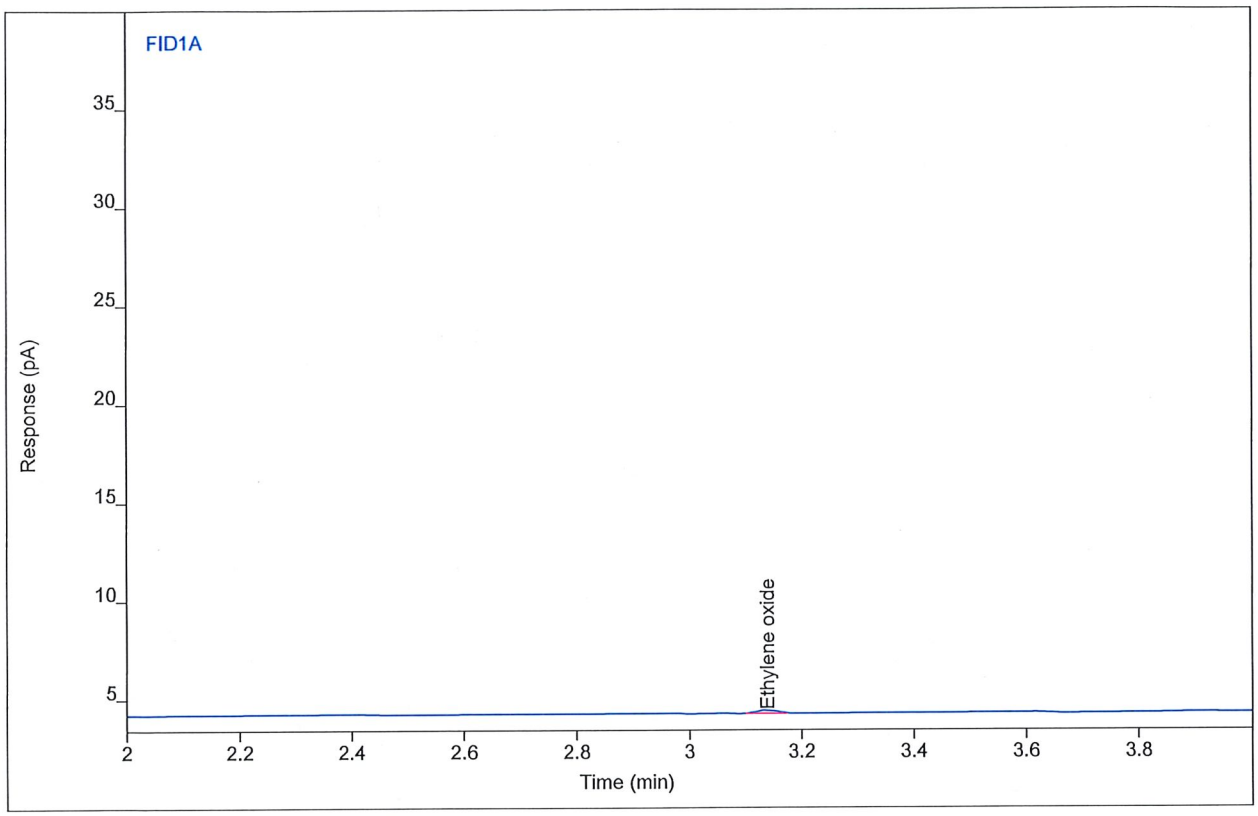
13:49:29 01/31/19 Justin Guenzler II - Baseline

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	004F0303.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 11:37 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 4
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.37980	0.17543	1.99979	1	1.99979	ppm

Analyst Peak Integration Comments

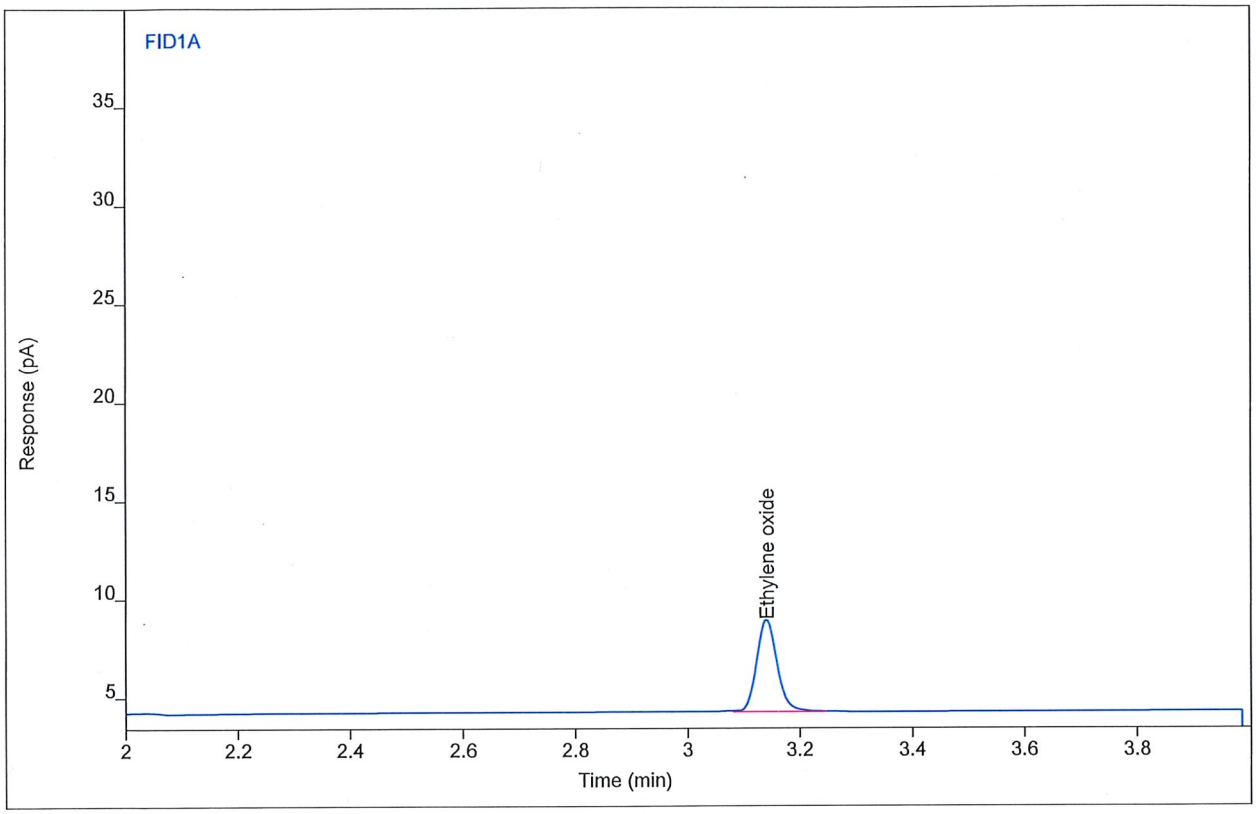
13:49:43 01/31/19 Justin Guenzler II - Baseline

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 2-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0501.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 12:30 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	1 of 1
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



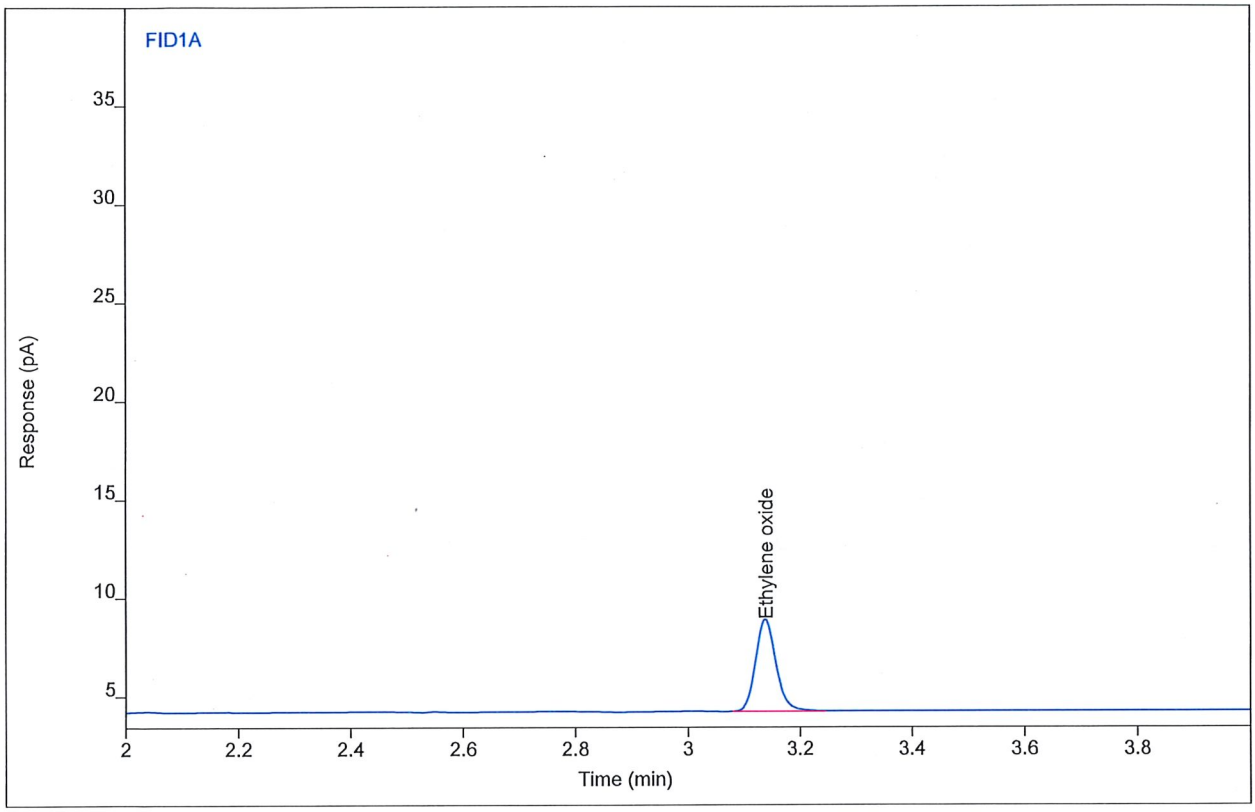
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	11.8726	4.54315	61.6524	21	1294.70	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 2-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0601.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 12:37 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	1 of 2
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



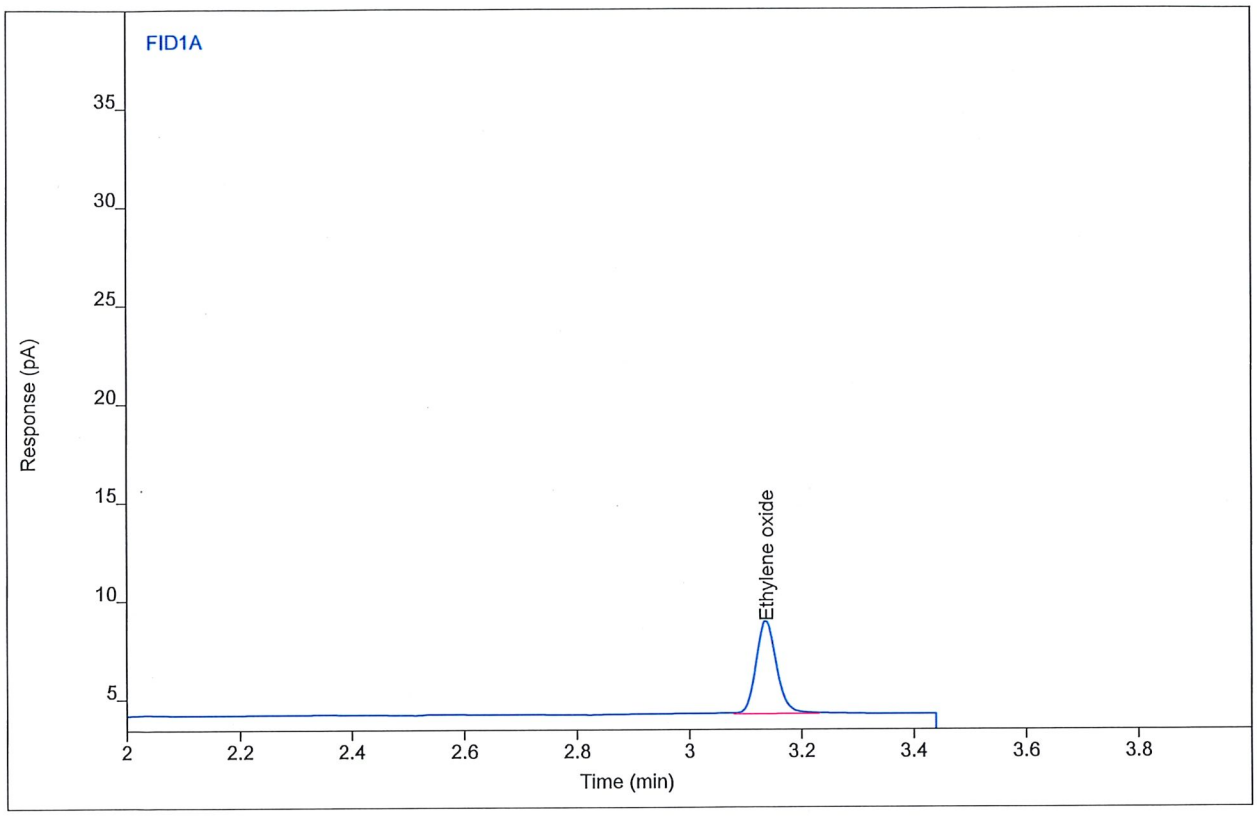
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	11.9217	4.54206	61.9073	21	1300.05	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 2-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0602.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 12:44 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	2 of 2
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



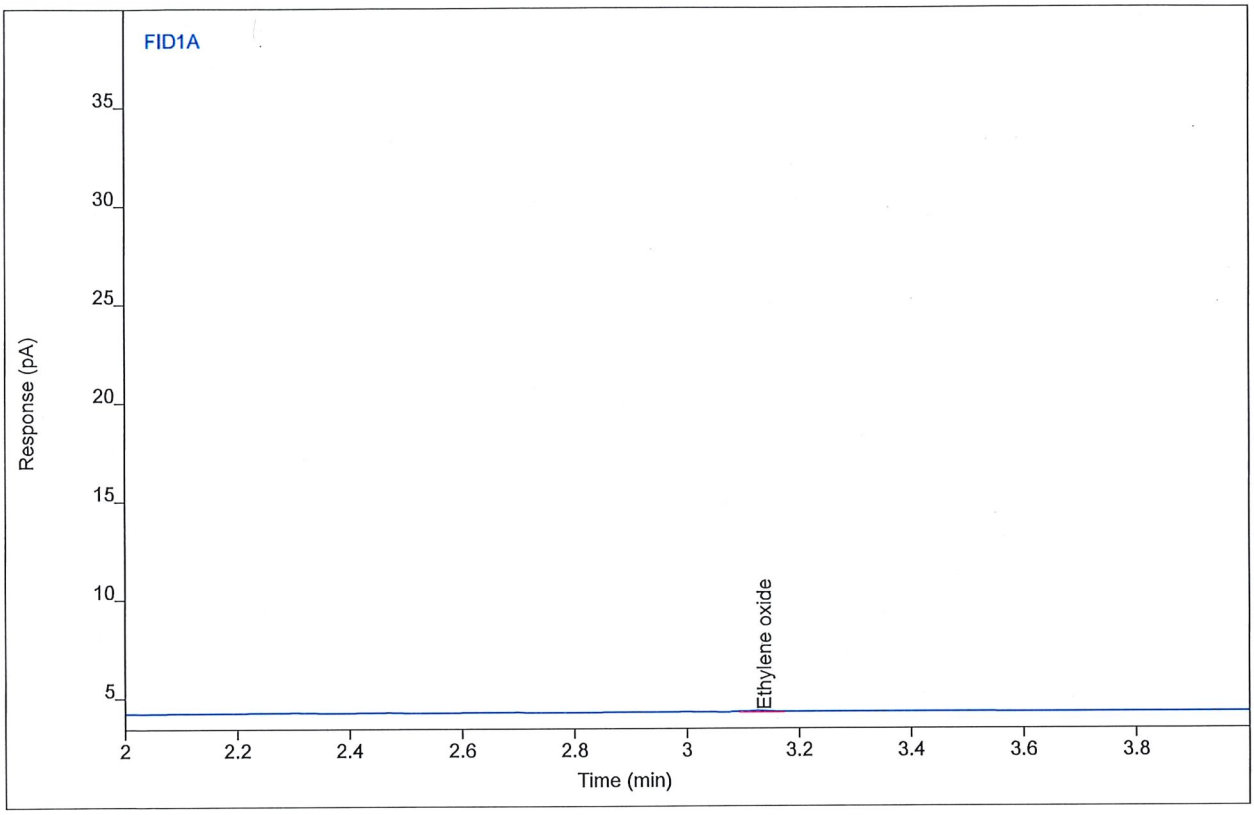
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	12.0037	4.57016	62.3326	21	1308.98	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 2-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	006F0201.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 10:18 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.25955	0.09851	1.36661	1	1.36661	ppm

Analyst Peak Integration Comments

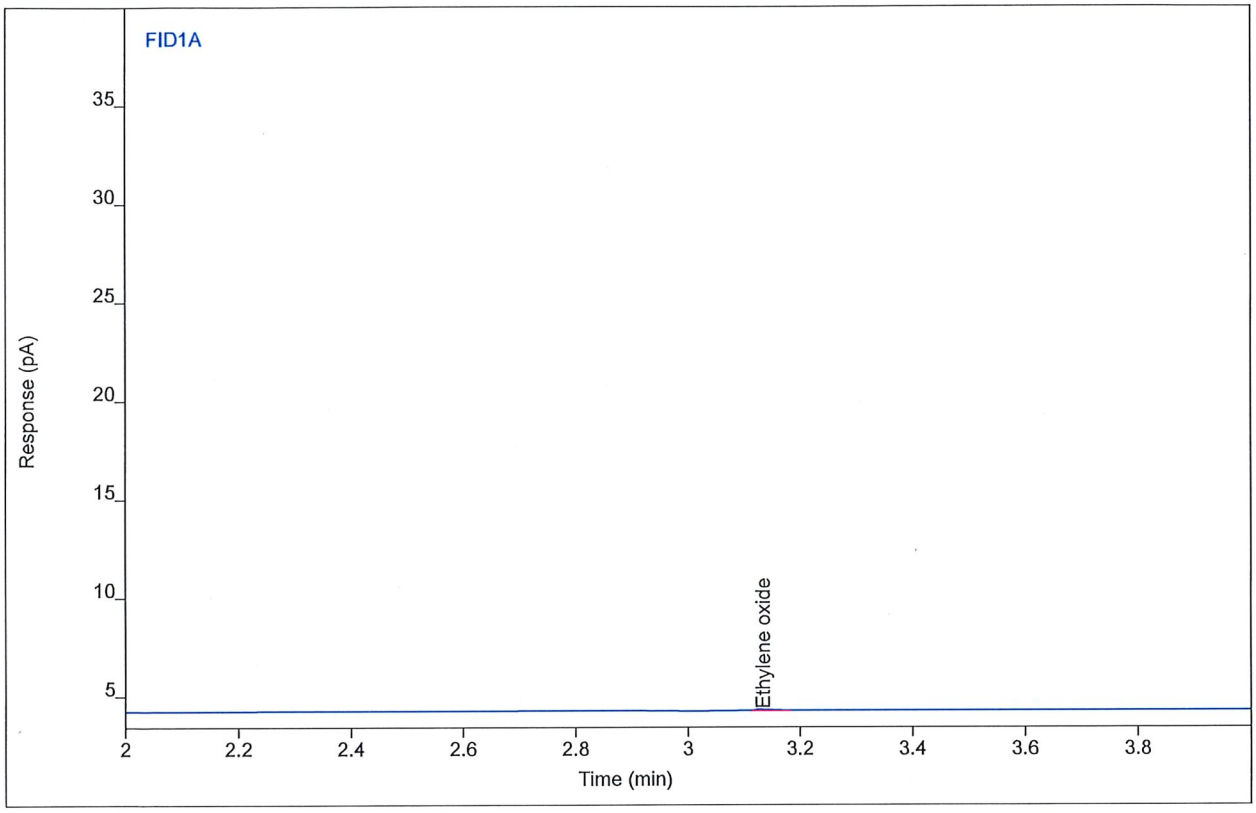
10:55:26 01/31/19 Justin Guenzler not integrated - Ethylene oxide

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 2-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	006F0202.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 10:34 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.13	0.20398	0.08873	1.07403	1	1.07403	ppm

Analyst Peak Integration Comments

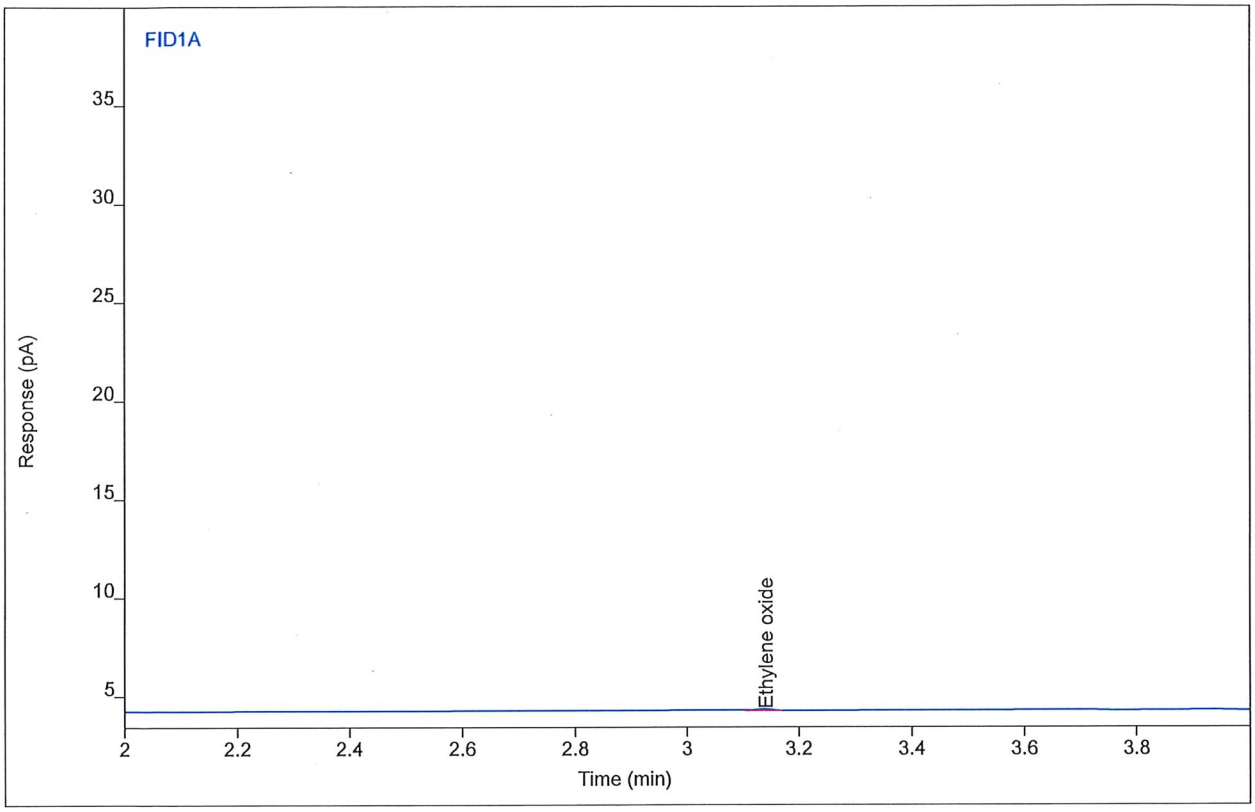
10:56:00 01/31/19 Justin Guenzler not integrated - Ethylene oxide

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013119 E Outlet 2-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	006F0203.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 10:50 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 6
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.15817	0.08186	0.83284	1	0.83284	ppm

Analyst Peak Integration Comments

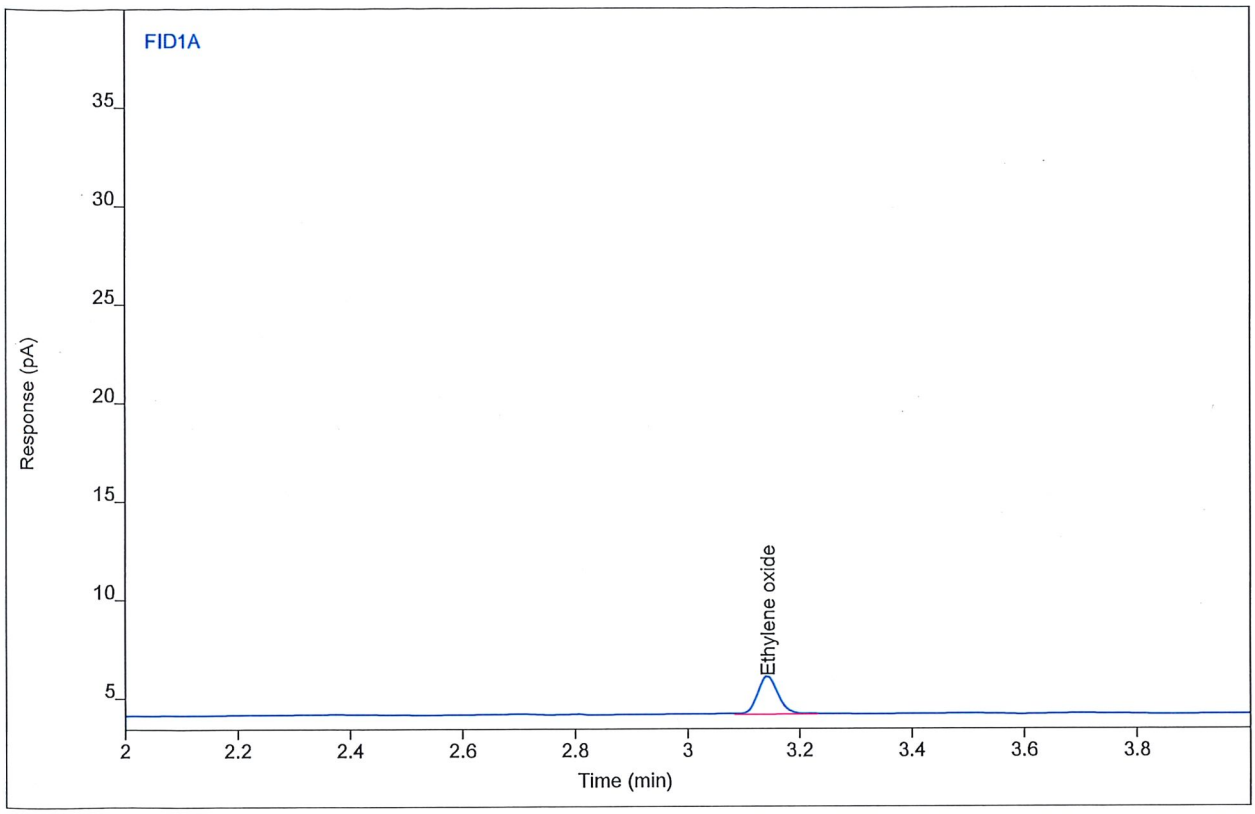
11:07:31 01/31/19 Justin Guenzler not integrated - Ethylene oxide

Chromatogram Report

Sample Name	0119-148.r013119 D Inlet 3-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	007F1001.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 1:45 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



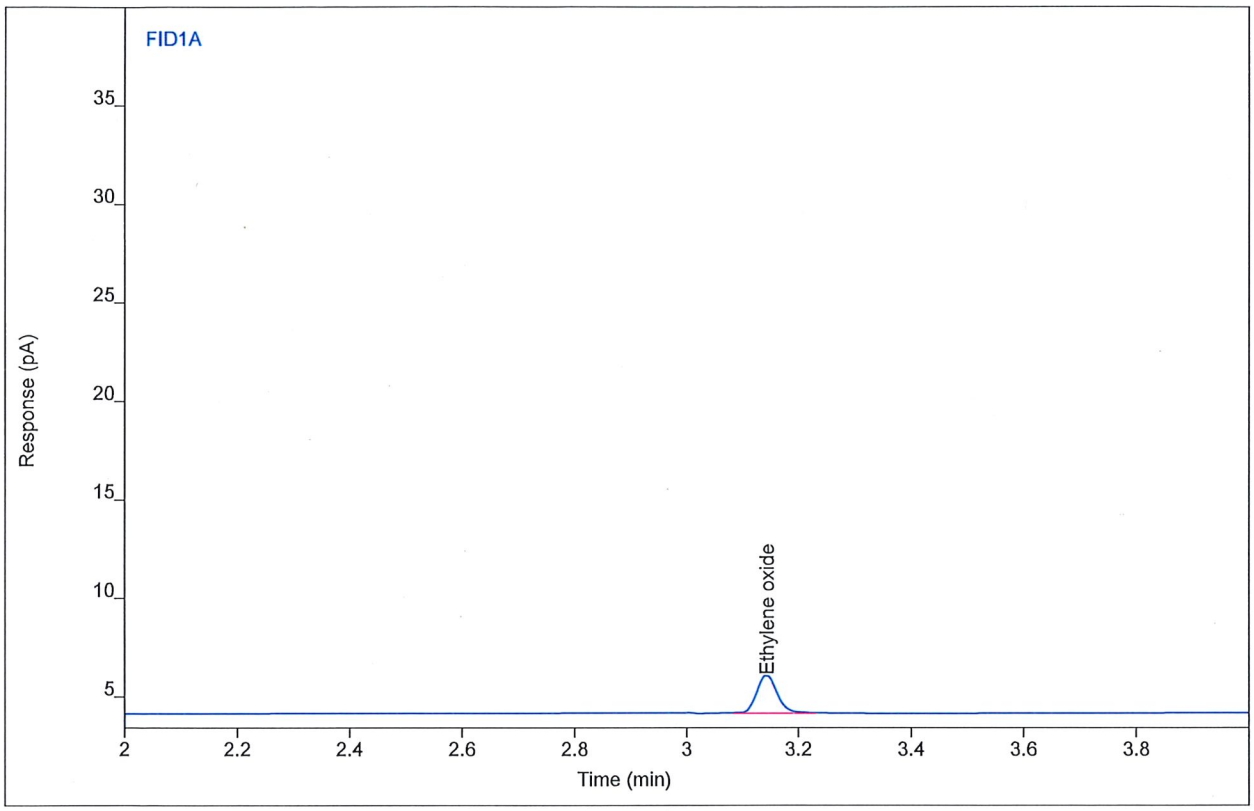
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	4.91347	1.85755	25.5601	21	536.761	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Inlet 3-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	007F1002.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 1:52 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



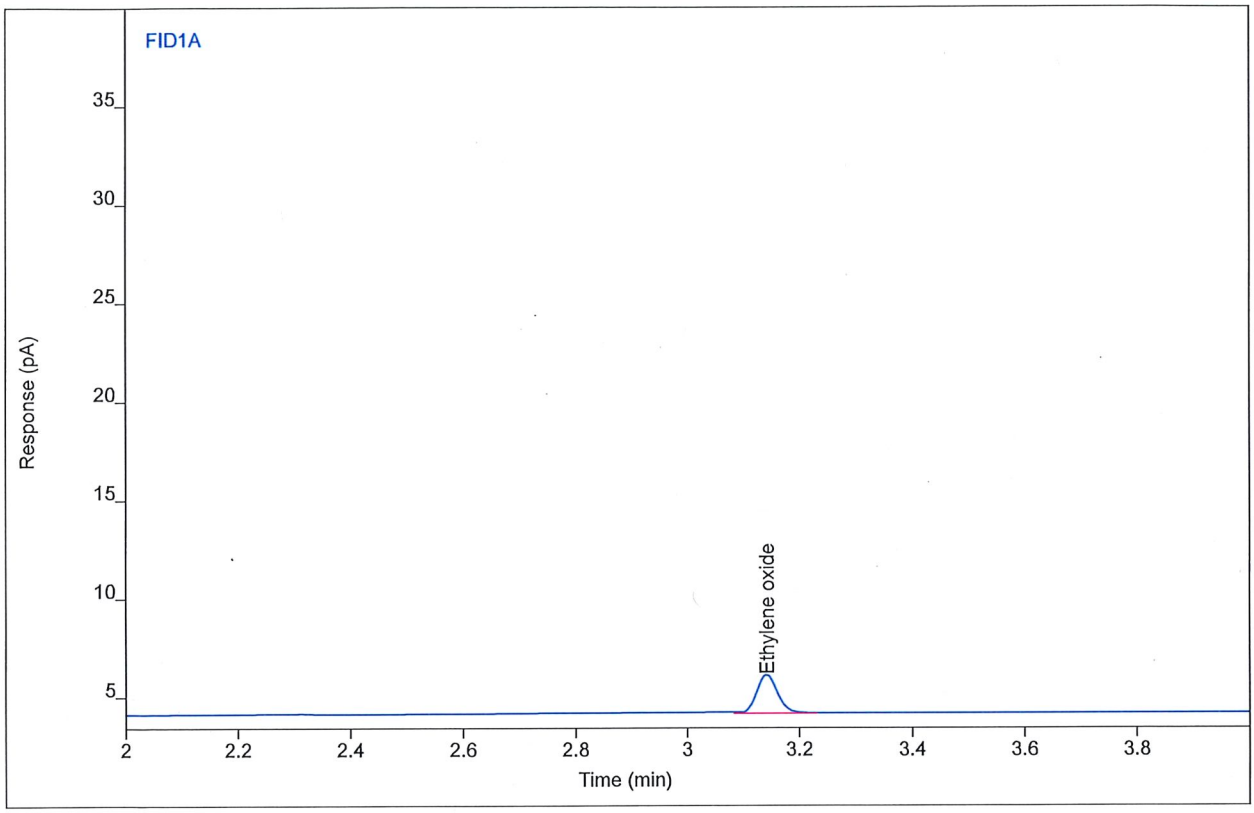
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	4.95737	1.86056	25.7877	21	541.542	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Inlet 3-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	007F1003.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 1:59 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM

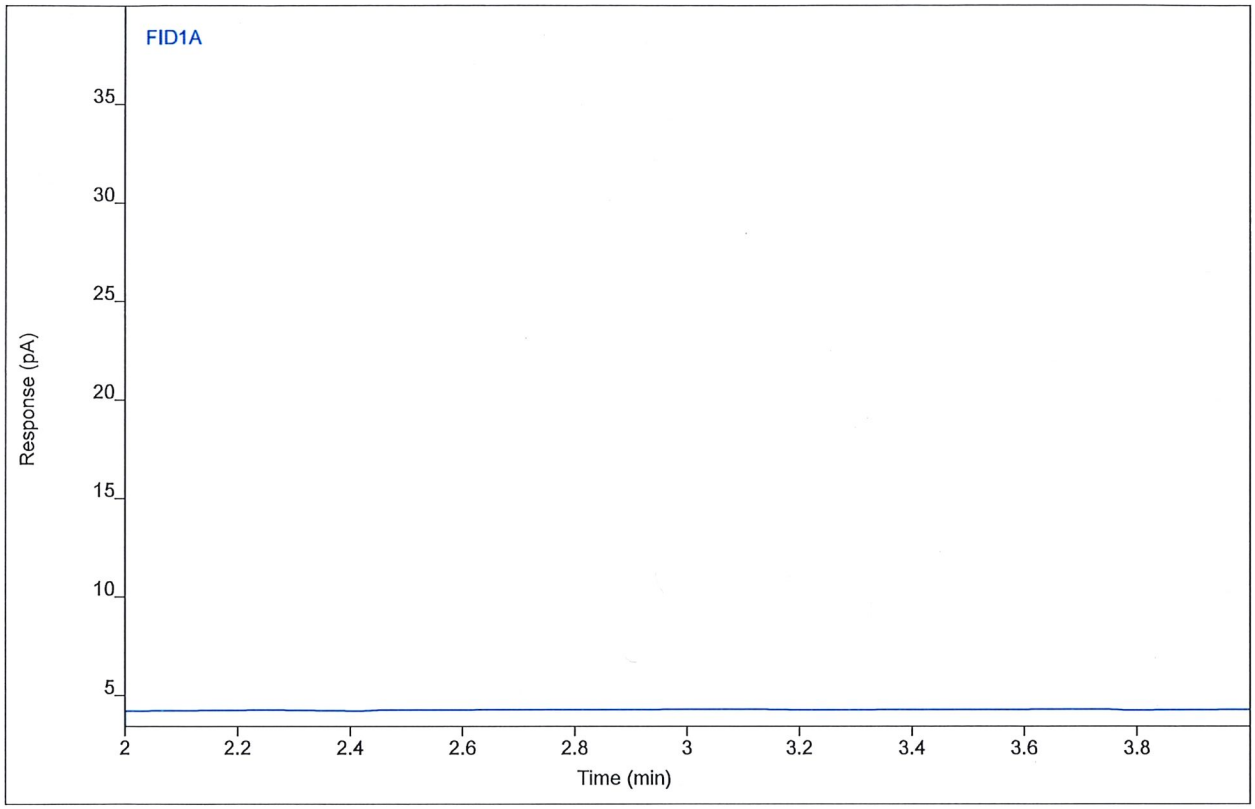


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	4.98598	1.89354	25.9361	21	544.659	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013119 D Outlet 3-2.Bag	Sample Type	Sample
Sequence Name	GUMMOP1538A ver.4	Vial Number	Vial 5
Inj Data File	005F0401.D	Injection Volume	1000
File Location	GC/2019/Gummo/Quarter 1	Injection	1 of 3
Injection Date	1/31/2019 11:53 AM	Acquisition Method	AQ_GUMMOP1466.M
File Modified	2/18/2019 6:23 AM	Analysis Method	GUMMOP1536F_EO.M
Instrument		Method Modified	2/18/2019 6:19 AM
Operator	Justin Guenzler	Printed	2/18/2019 7:26 AM



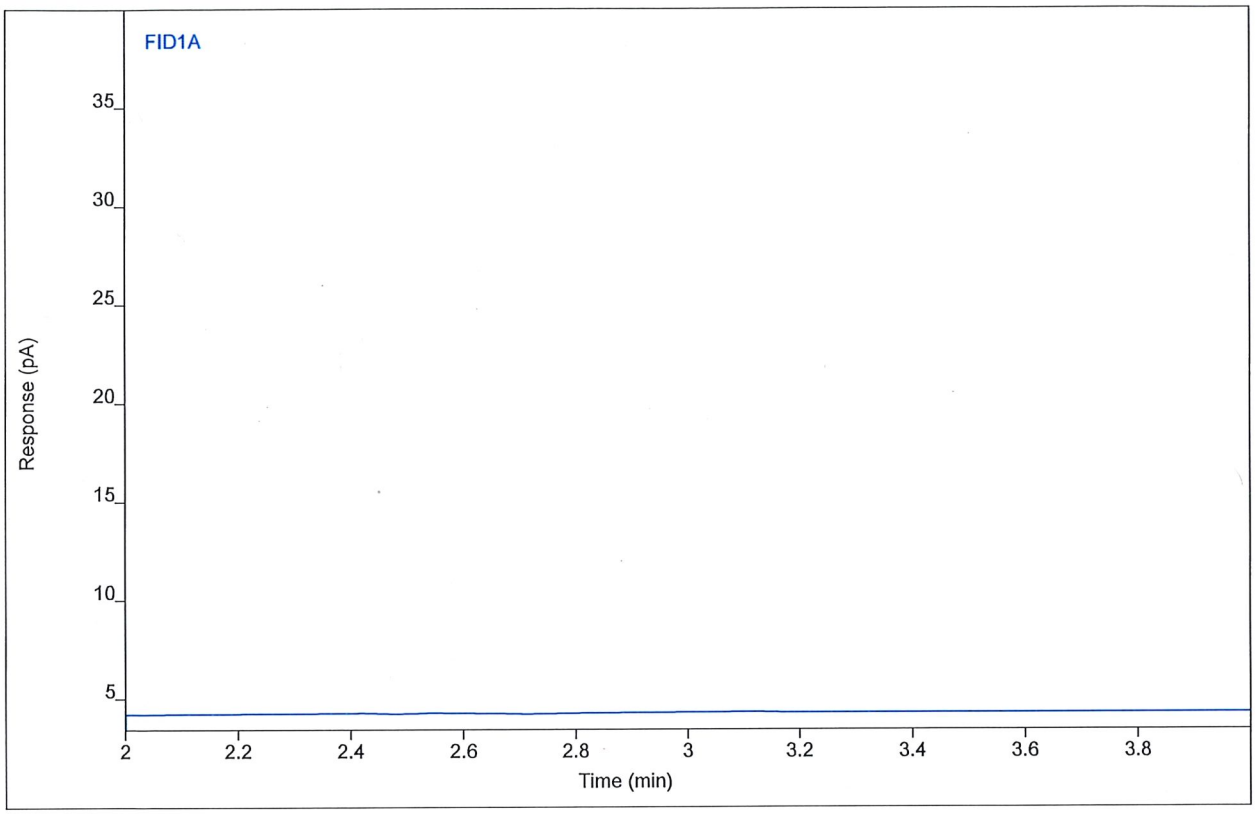
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 3-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	005F0402.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 12:09 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



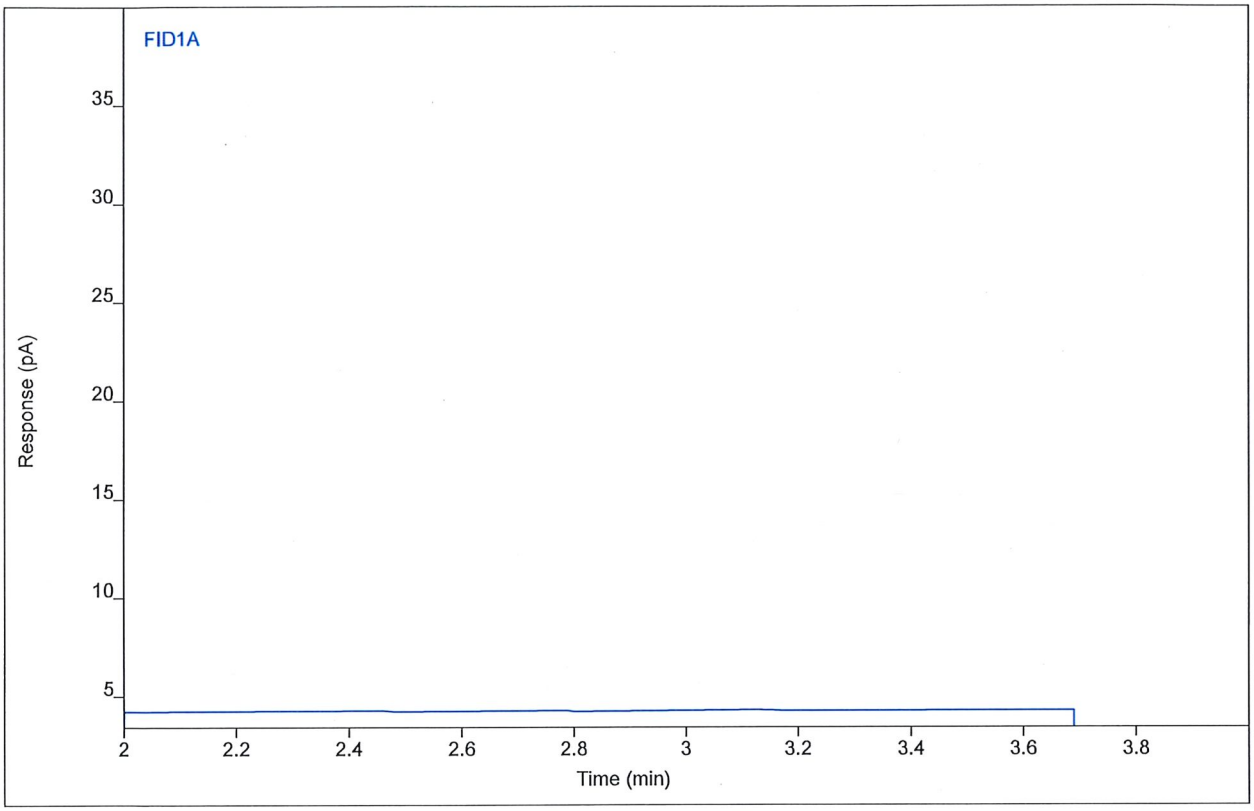
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 3-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	005F0403.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 12:25 PM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



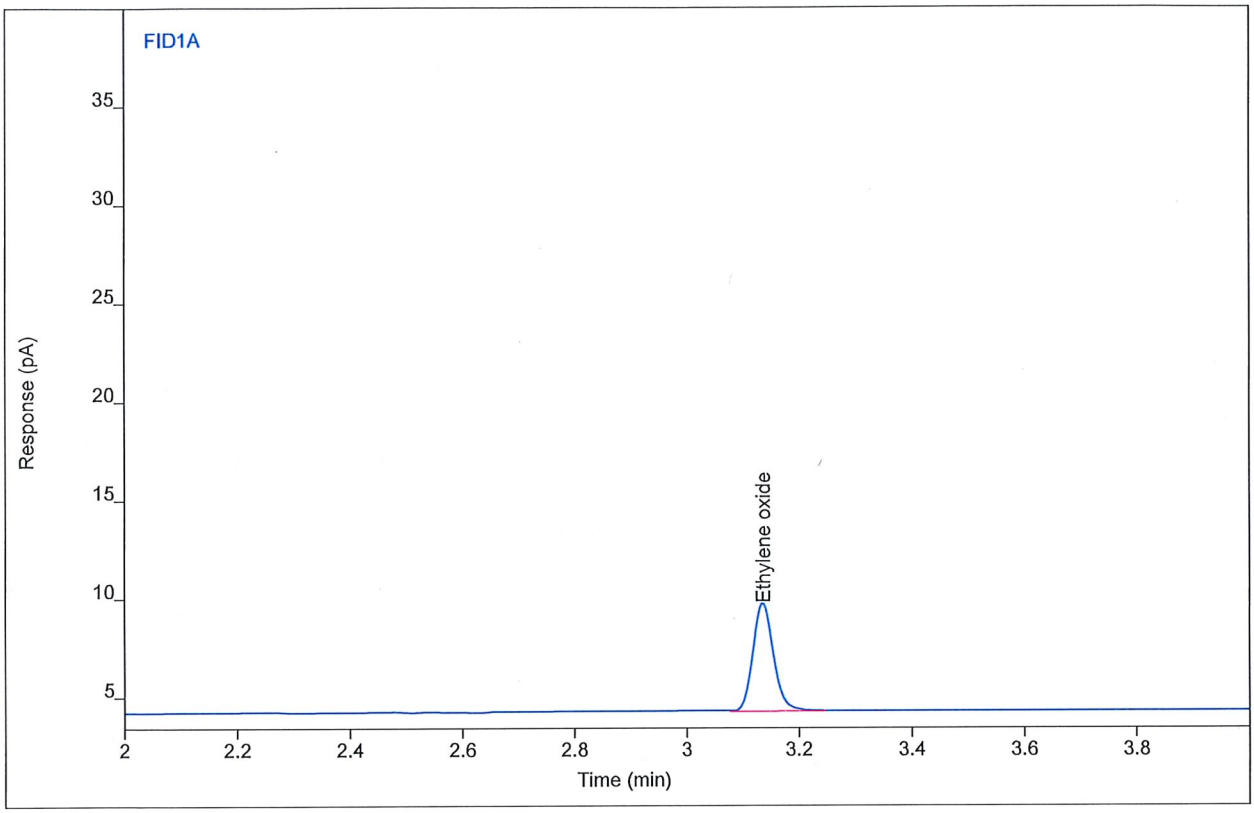
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	005F1401.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:58 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



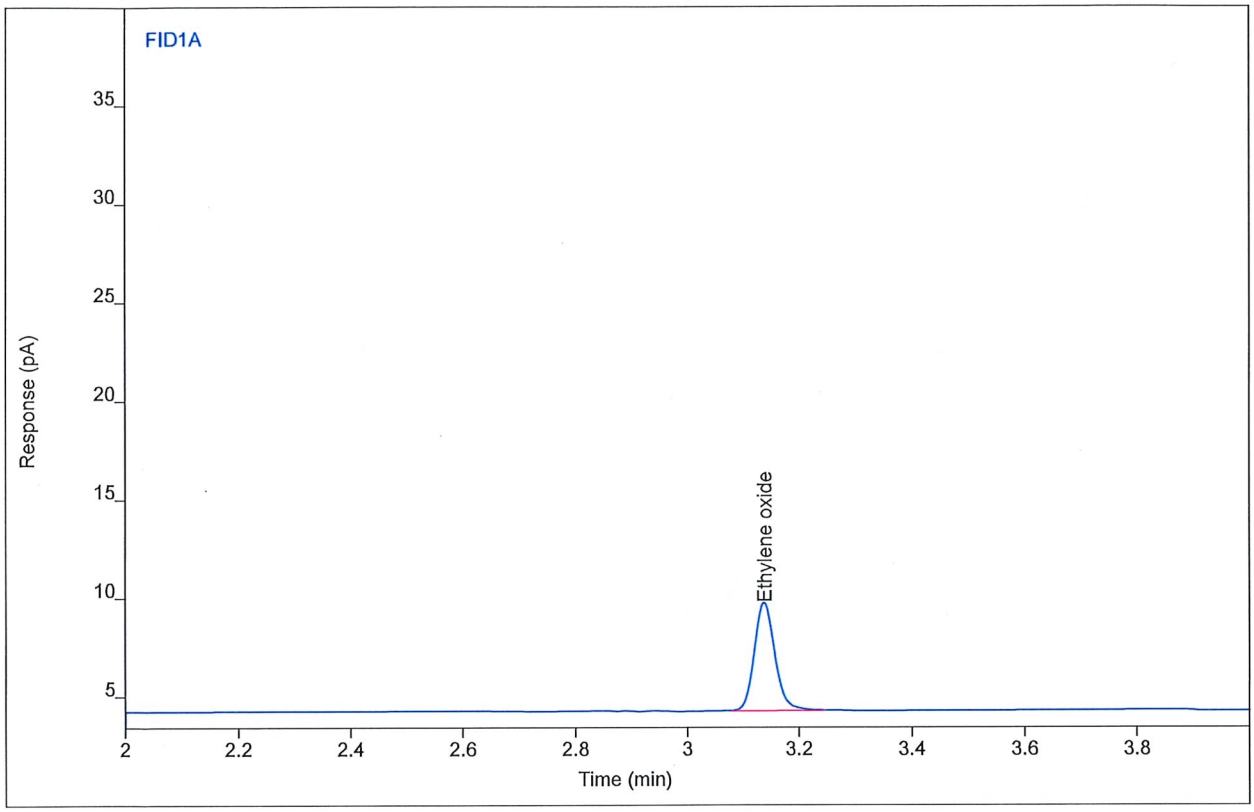
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	14.0593	5.29047	72.9935	21	1532.86	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	005F1402.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 4:05 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



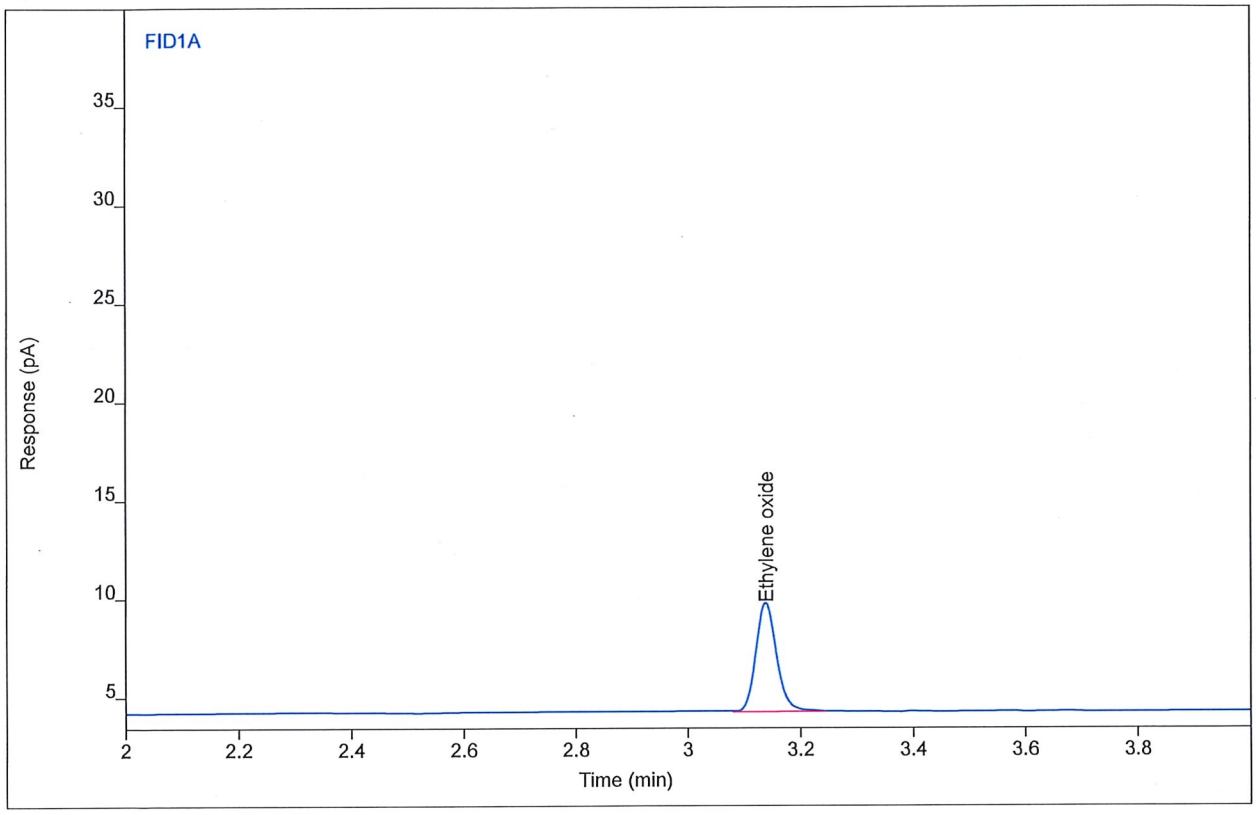
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	14.0838	5.34210	73.1206	21	1535.53	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	005F1403.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 4:12 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



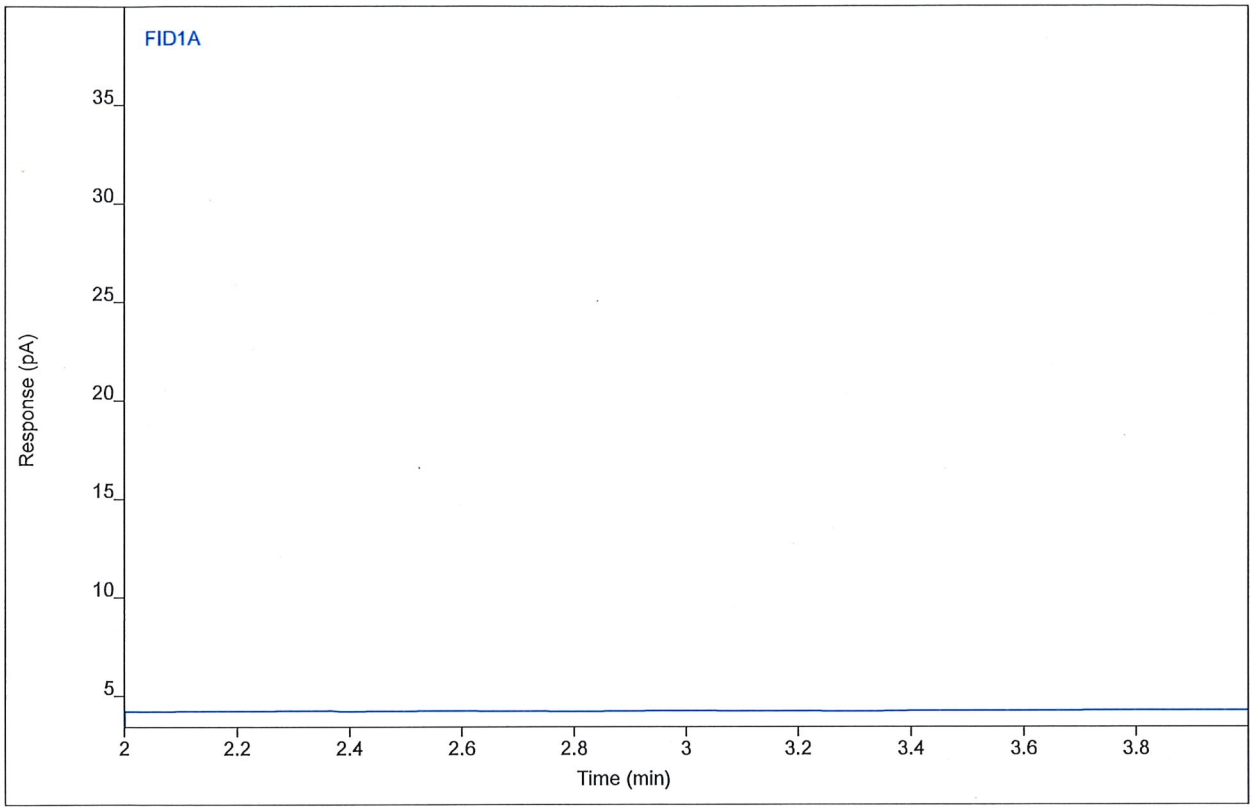
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	14.0951	5.38553	73.1793	21	1536.77	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013119 E Outlet 4-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0101.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 9:30 AM
File Modified	2/18/2019 6:22 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



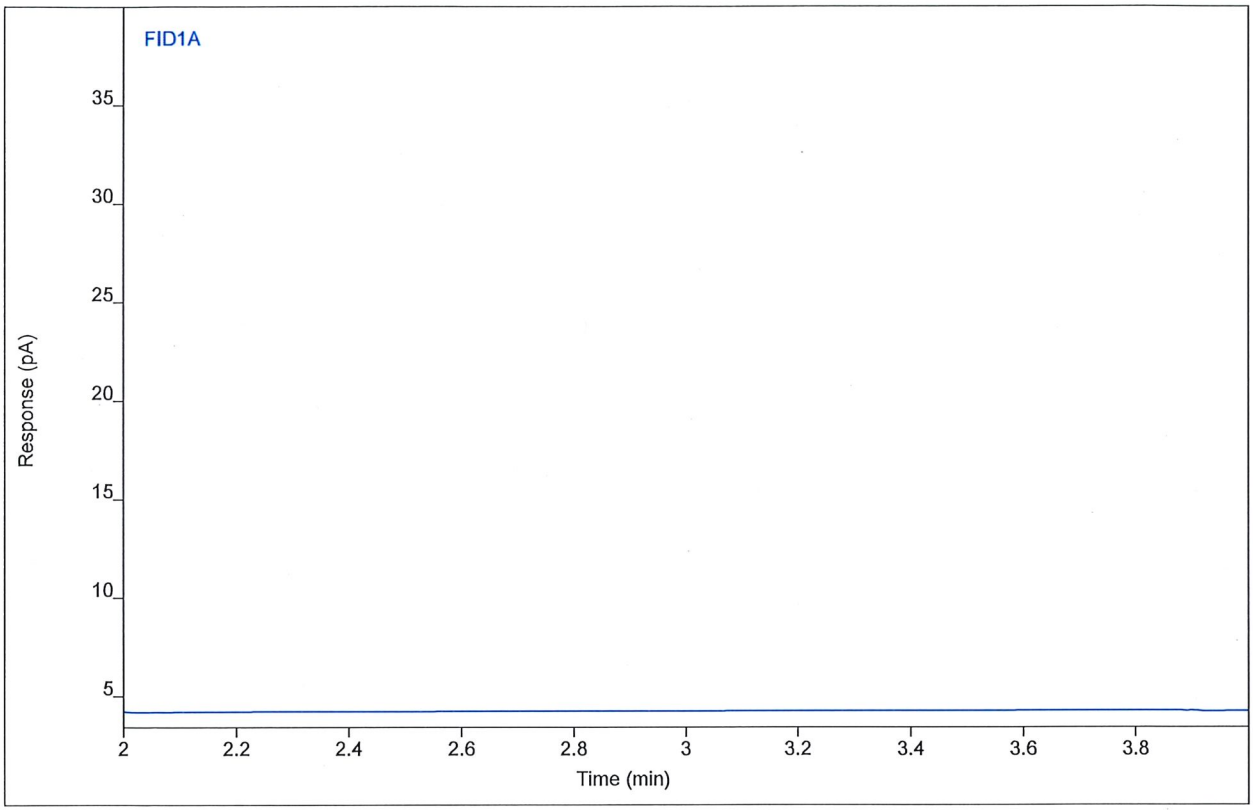
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 4-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0102.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 9:46 AM
File Modified	2/18/2019 6:22 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



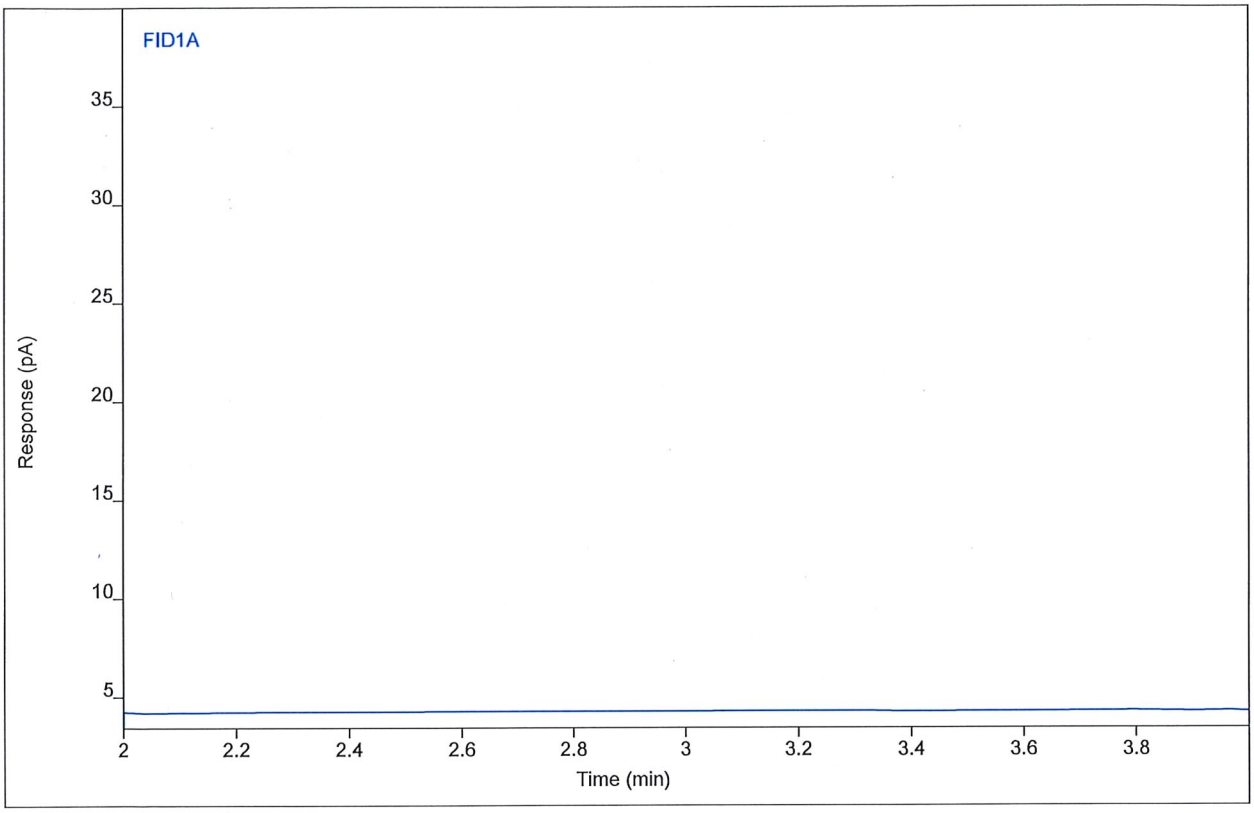
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 4-2.Bag
Sequence Name	GUMMOP1538A ver.4
Inj Data File	002F0103.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 10:02 AM
File Modified	2/18/2019 6:23 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM

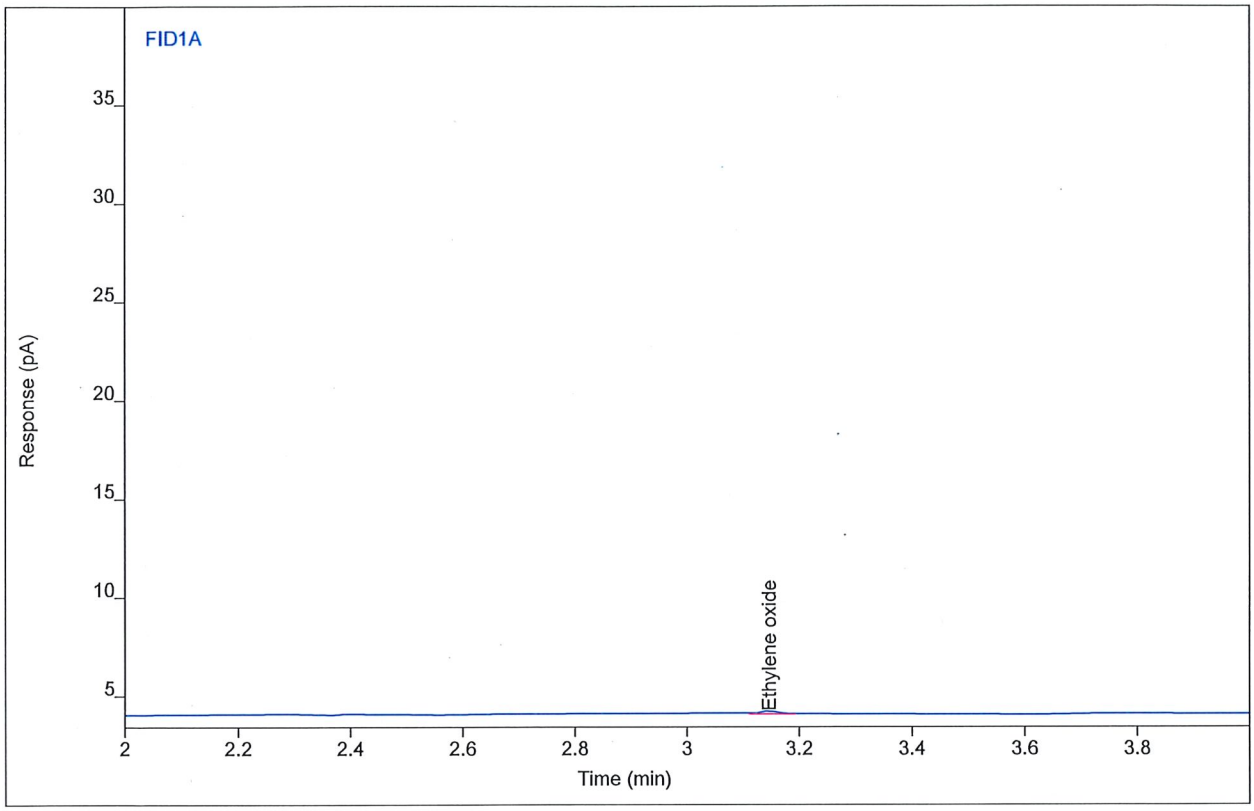


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013119 D Outlet 1-2 BL.Bag	Sample Type	Sample
Sequence Name	GUMMOP1540A ver.3	Vial Number	Vial 2
Inj Data File	002F0401.D	Injection Volume	1000
File Location	GC/2019/Gummo/Quarter 1	Injection	1 of 3
Injection Date	2/4/2019 9:11 AM	Acquisition Method	AQ_GUMMOP1466_AA.M
File Modified	2/18/2019 6:29 AM	Analysis Method	GUMMOP1536F_EO.M
Instrument		Method Modified	2/18/2019 6:19 AM
Operator	Justin Guenzler	Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.15	0.34218	0.13731	1.80169	1	1.80169	ppm

Analyst Peak Integration Comments

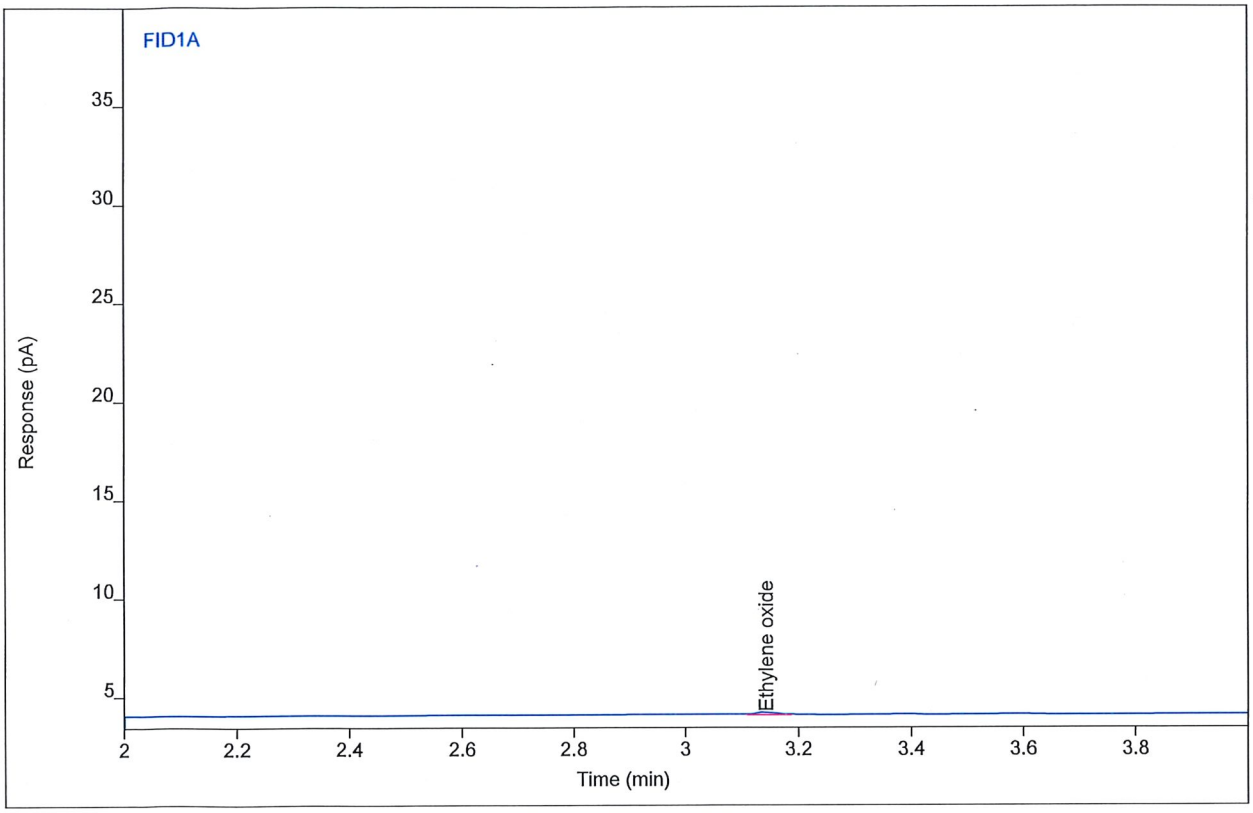
09:23:02 02/04/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2 BL.Bag
Sequence Name	GUMMOP1540A ver.3
Inj Data File	002F0402.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 9:17 AM
File Modified	2/18/2019 6:29 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	3.14	0.33441	0.13674	1.76081	1	1.76081	ppm

Analyst Peak Integration Comments

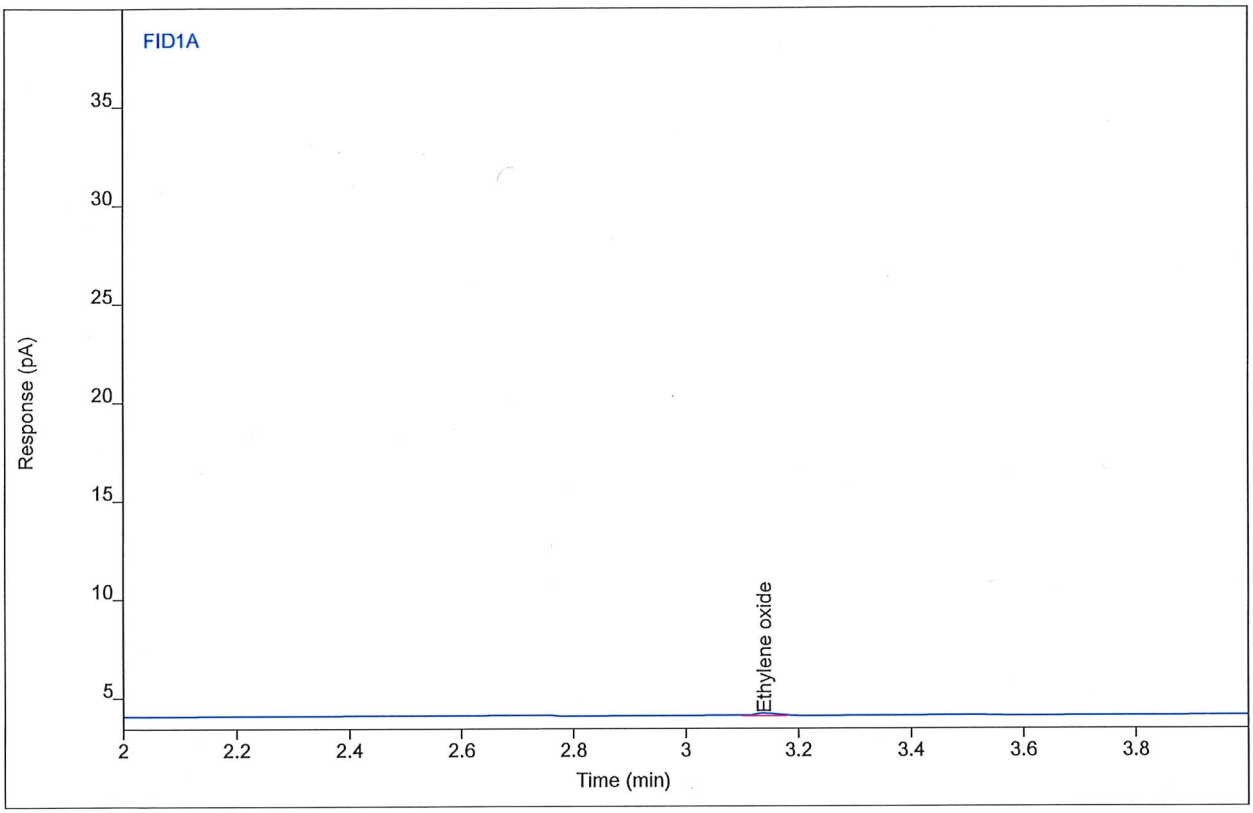
09:23:14 02/04/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2 BL.Bag
Sequence Name	GUMMOP1540A ver.3
Inj Data File	002F0403.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 9:24 AM
File Modified	2/18/2019 6:29 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 2
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MF	3.14	0.33963	0.13791	1.78828	1	1.78828	ppm

Analyst Peak Integration Comments

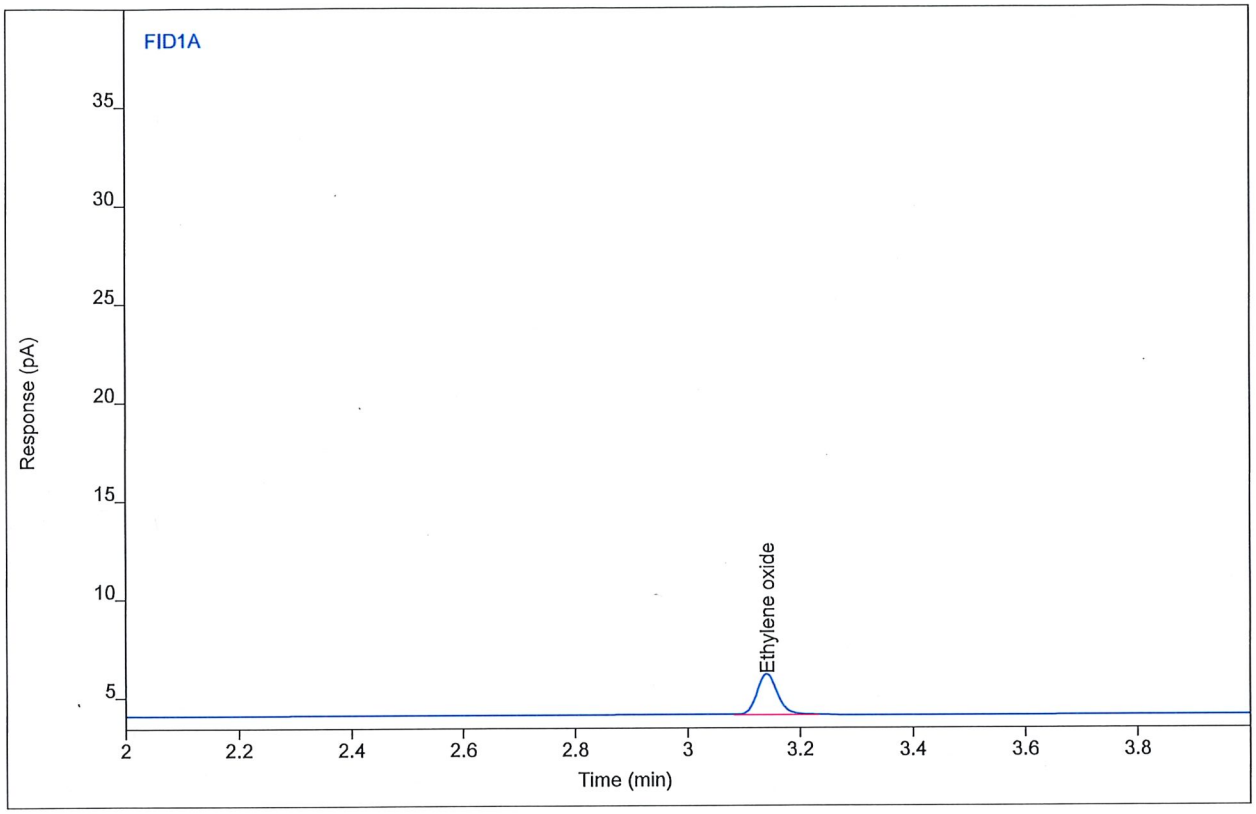
10:16:49 02/04/19 Justin Guenzler not integrated - EO

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1 BL.Bag
Sequence Name	GUMMOP1540A ver.3
Inj Data File	007F0201.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 7:43 AM
File Modified	2/18/2019 6:29 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



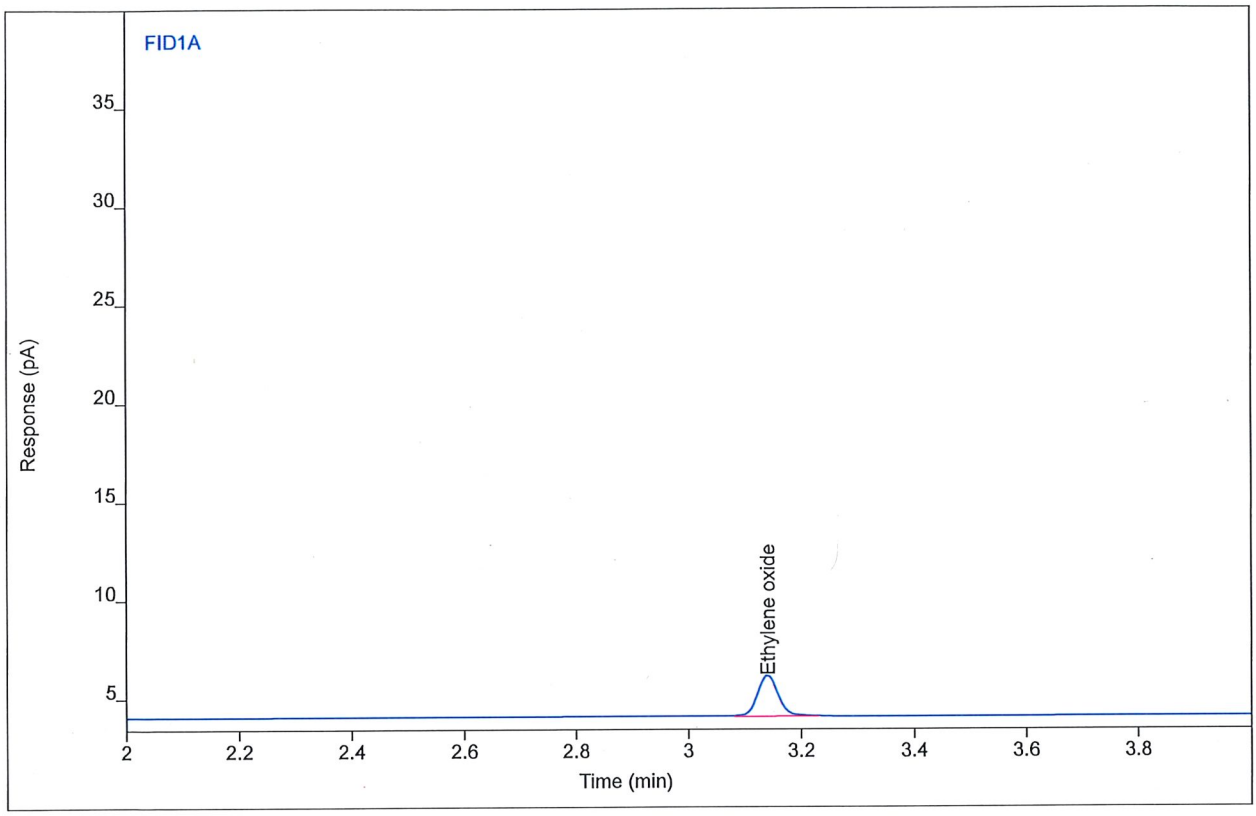
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	5.31190	2.02289	27.6264	31	856.419	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1 BL.Bag
Sequence Name	GUMMOP1540A ver.3
Inj Data File	007F0202.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 7:50 AM
File Modified	2/18/2019 6:29 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



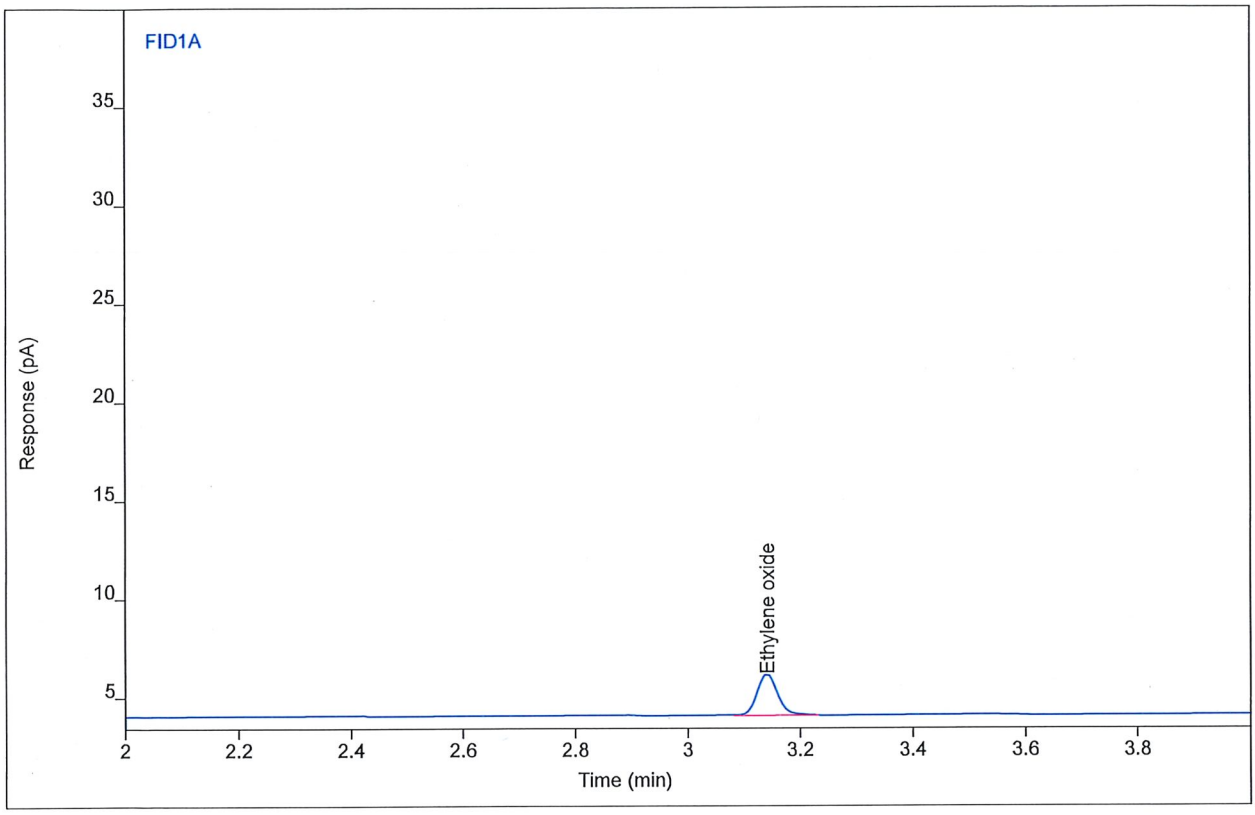
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	5.29899	2.01894	27.5595	31	854.344	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1 BL.Bag
Sequence Name	GUMMOP1540A ver.3
Inj Data File	007F0203.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 7:57 AM
File Modified	2/18/2019 6:29 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



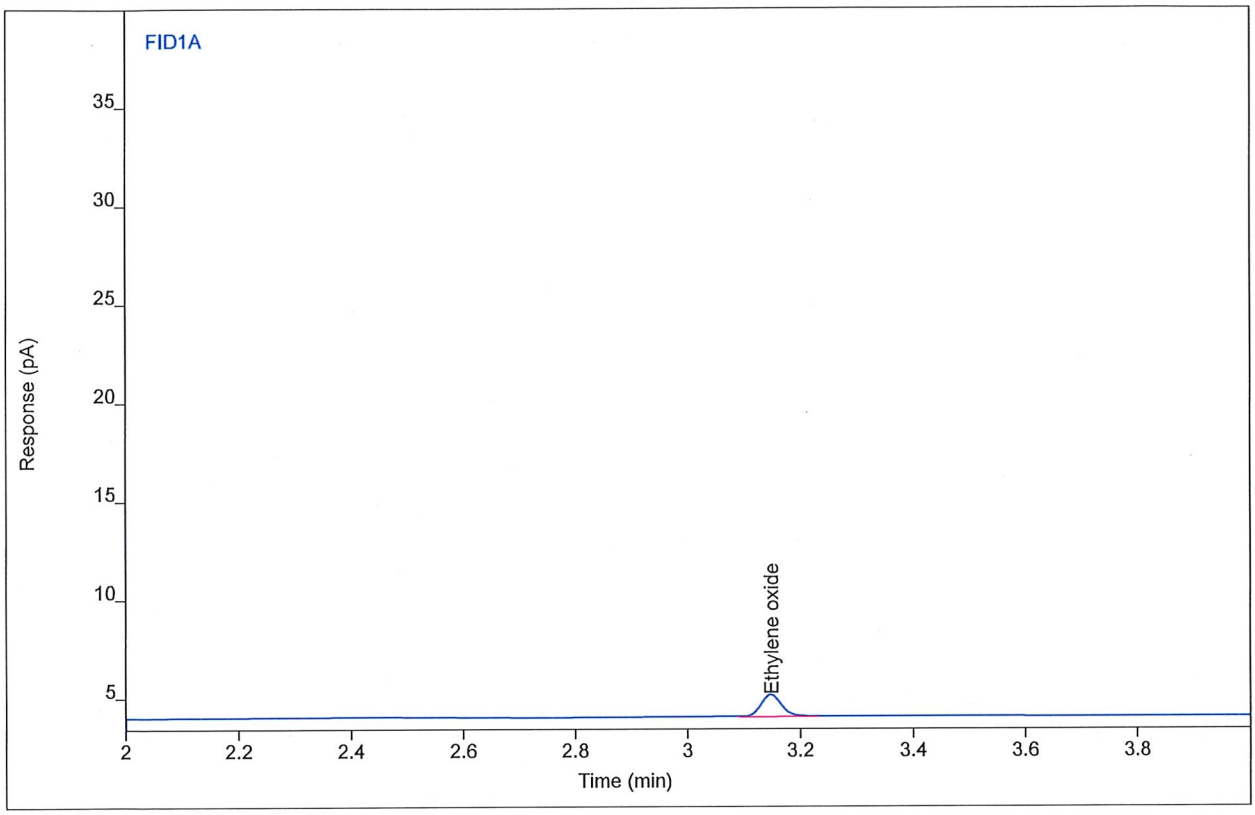
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	5.32740	2.03336	27.7068	31	858.912	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0701.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 12:59 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



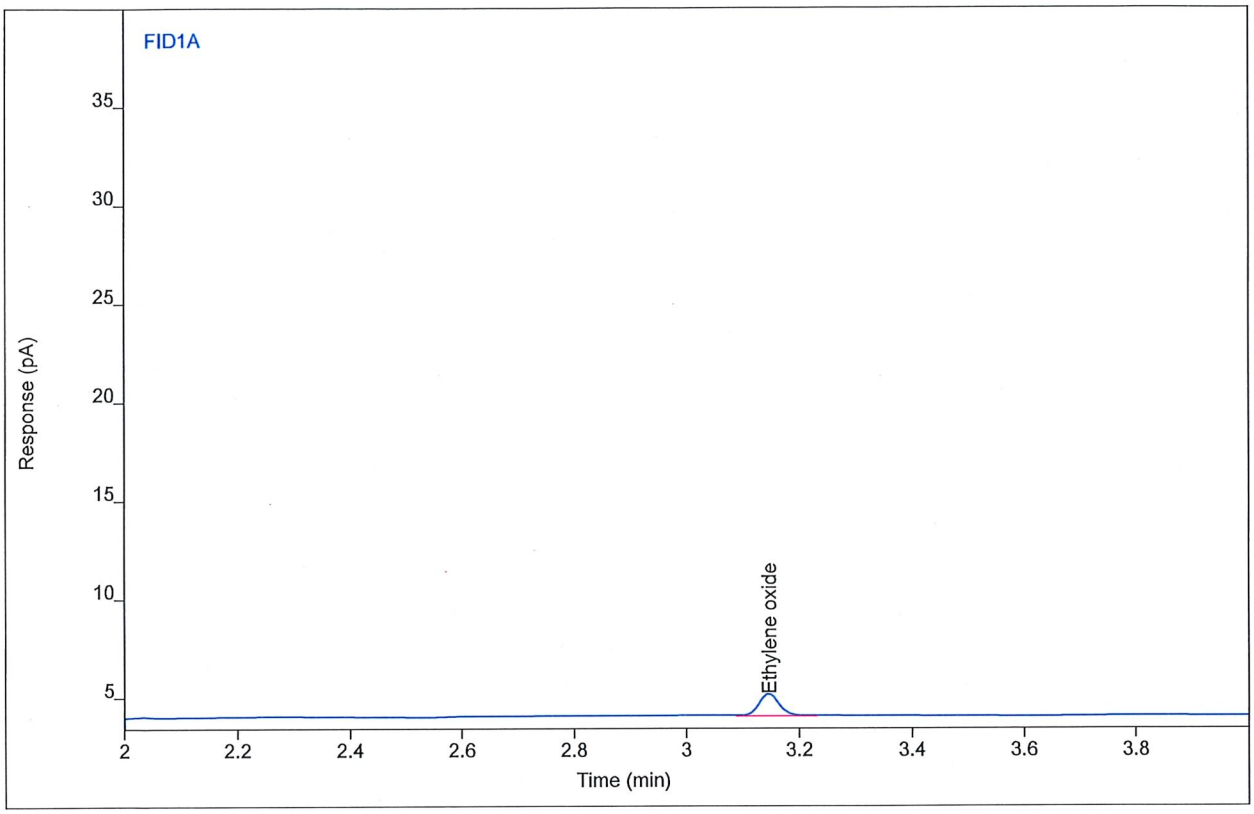
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.84370	1.06943	14.8255	1	14.8255	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0702.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 1:06 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



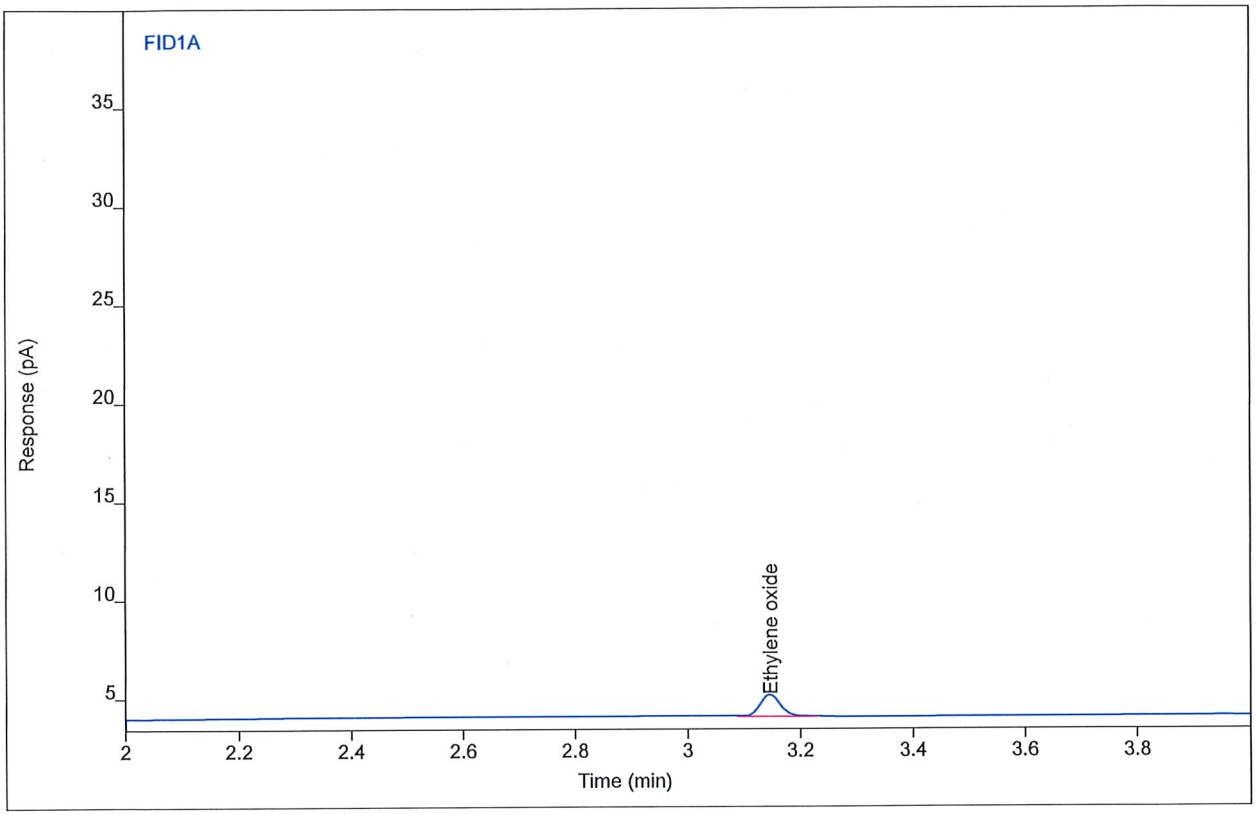
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.84390	1.06152	14.8265	1	14.8265	ppm

Chromatogram Report

Sample Name	0119-148.r013119 D Outlet 1-2 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0703.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 1:13 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



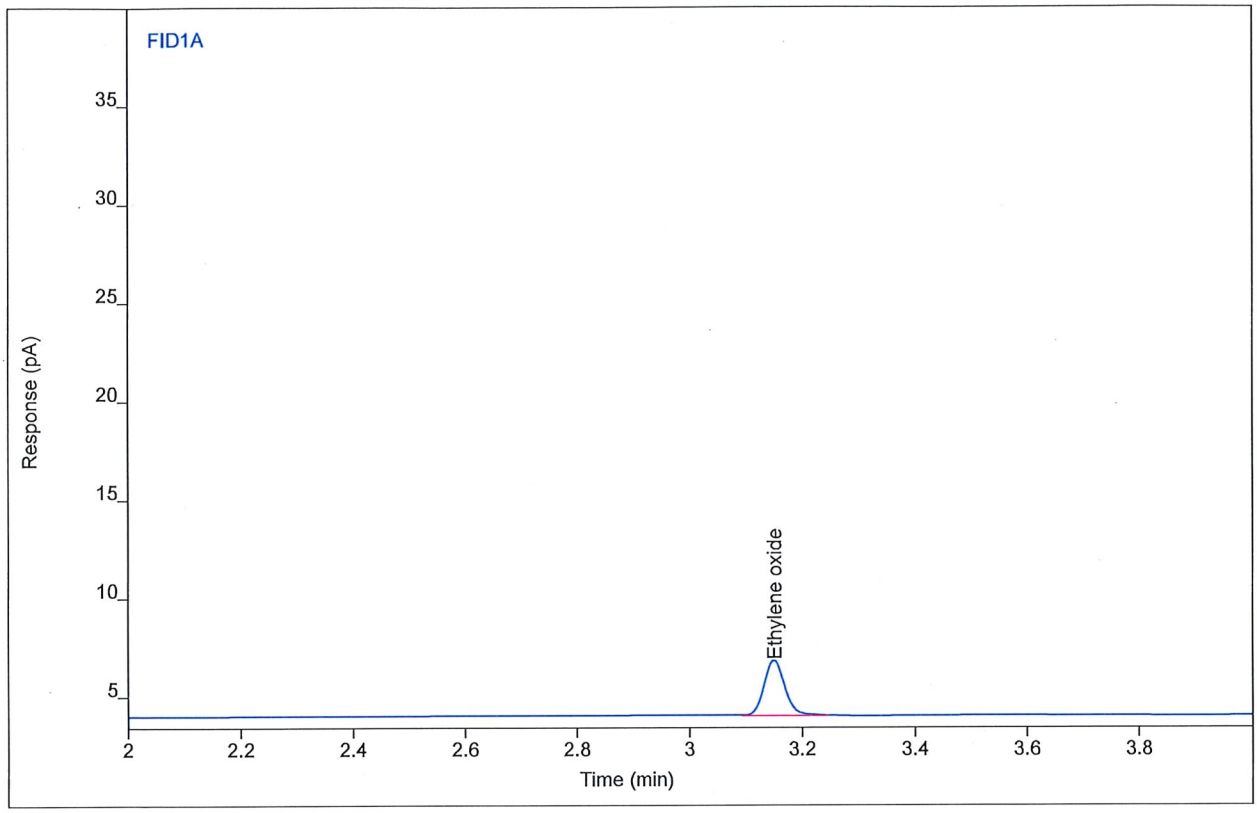
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	2.81802	1.05131	14.6923	1	14.6923	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0901.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 2:32 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



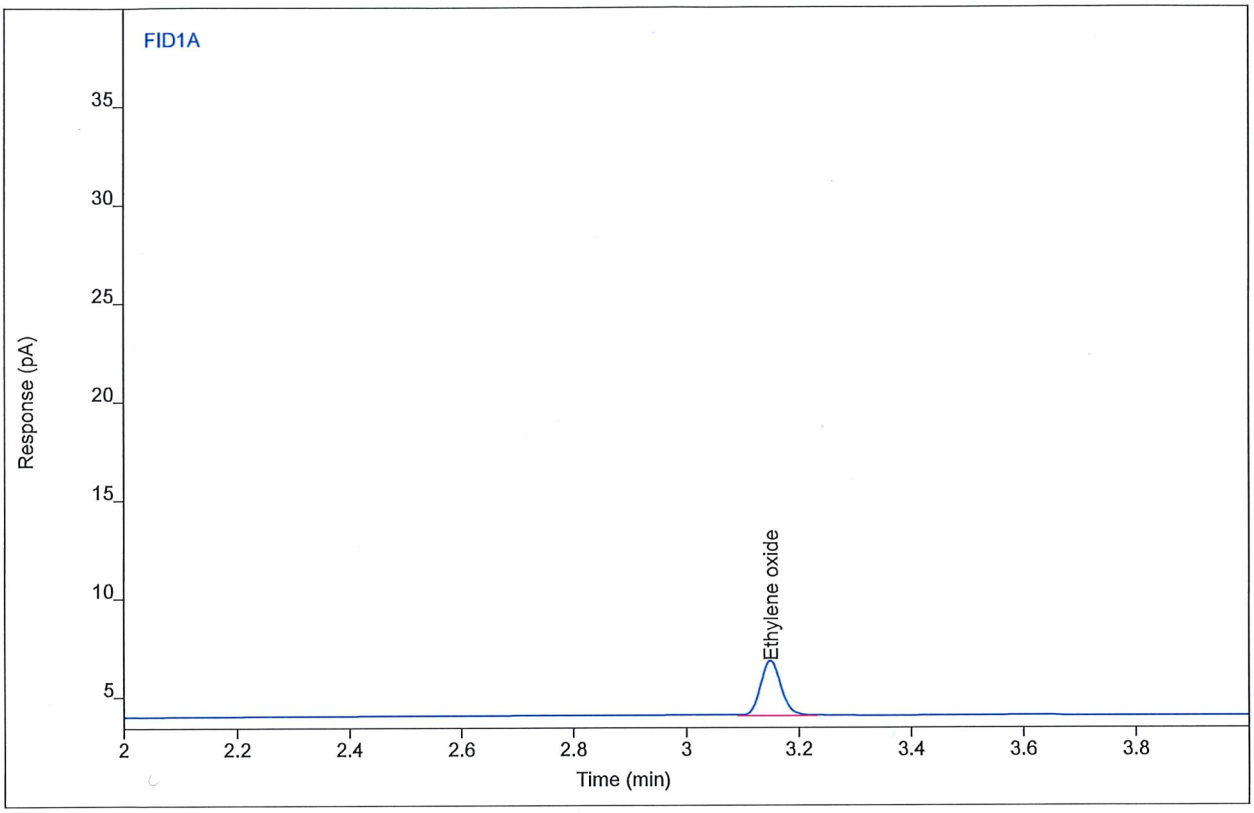
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	7.15658	2.72854	37.1936	31	1153.00	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-148.r013119 E Inlet 4-1 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0902.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 2:39 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



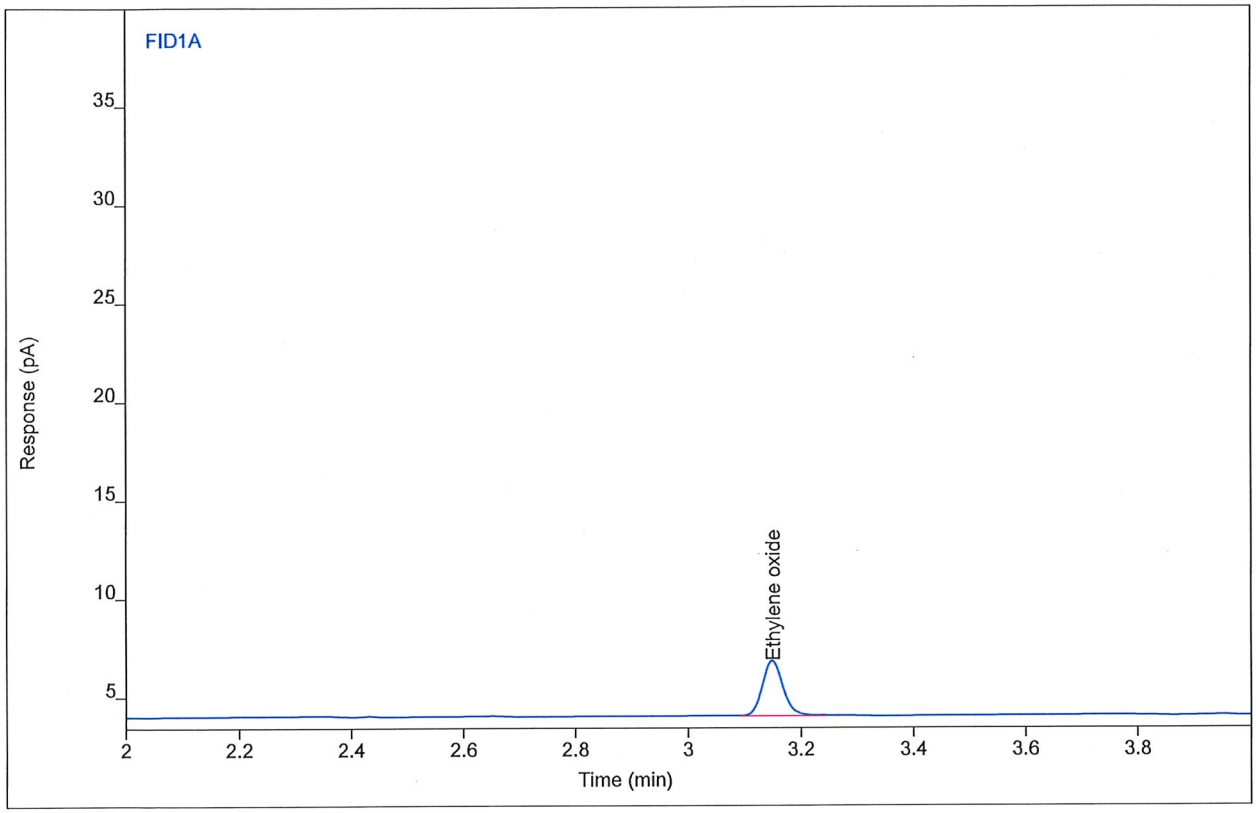
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	7.03097	2.69512	36.5422	31	1132.81	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Inlet 4-1 BL SP.Bag
Sequence Name	GUMMOP1542A ver.5
Inj Data File	007F0903.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 2:46 PM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



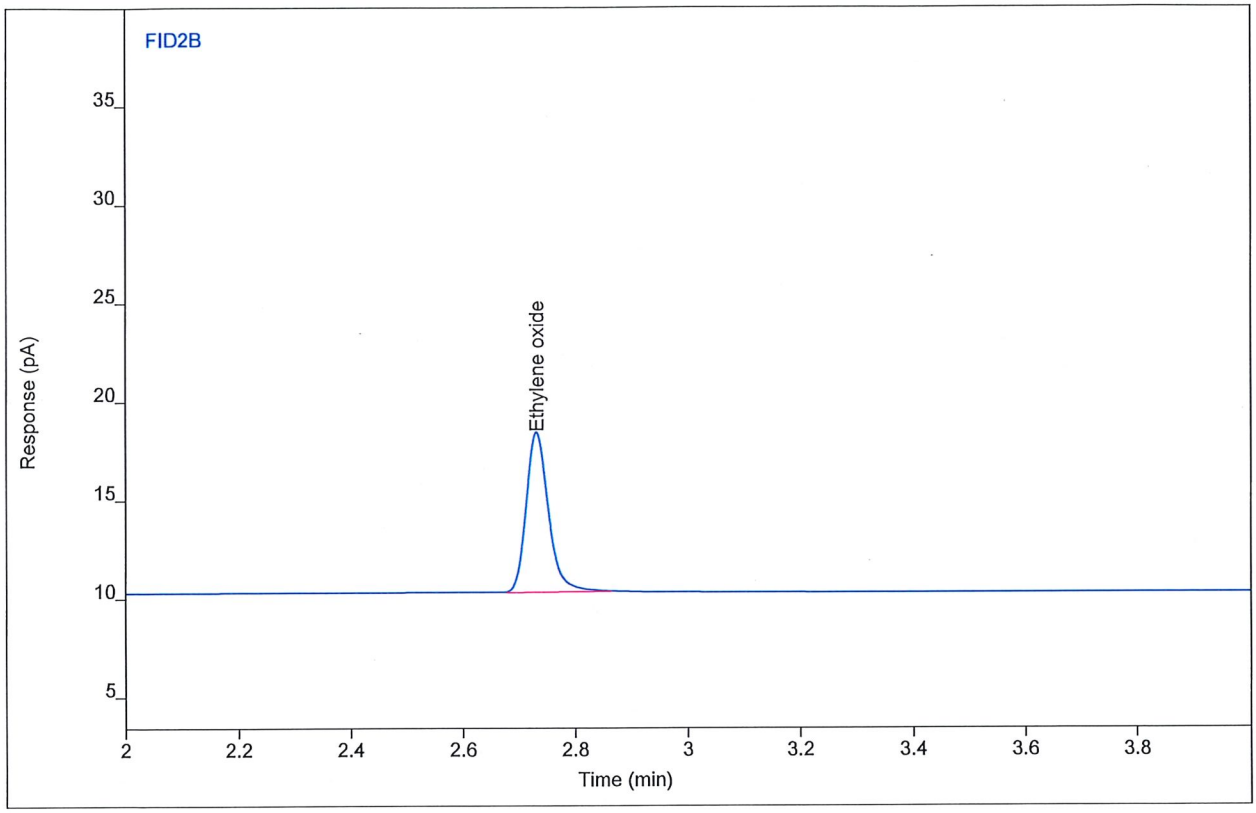
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	7.06682	2.69909	36.7281	31	1138.57	ppm

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU SP.Bag
Sequence Name	BETTYP1042A ver.2
Inj Data File	019B1401.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 11:13 AM
File Modified	2/15/2019 1:43 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 19
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



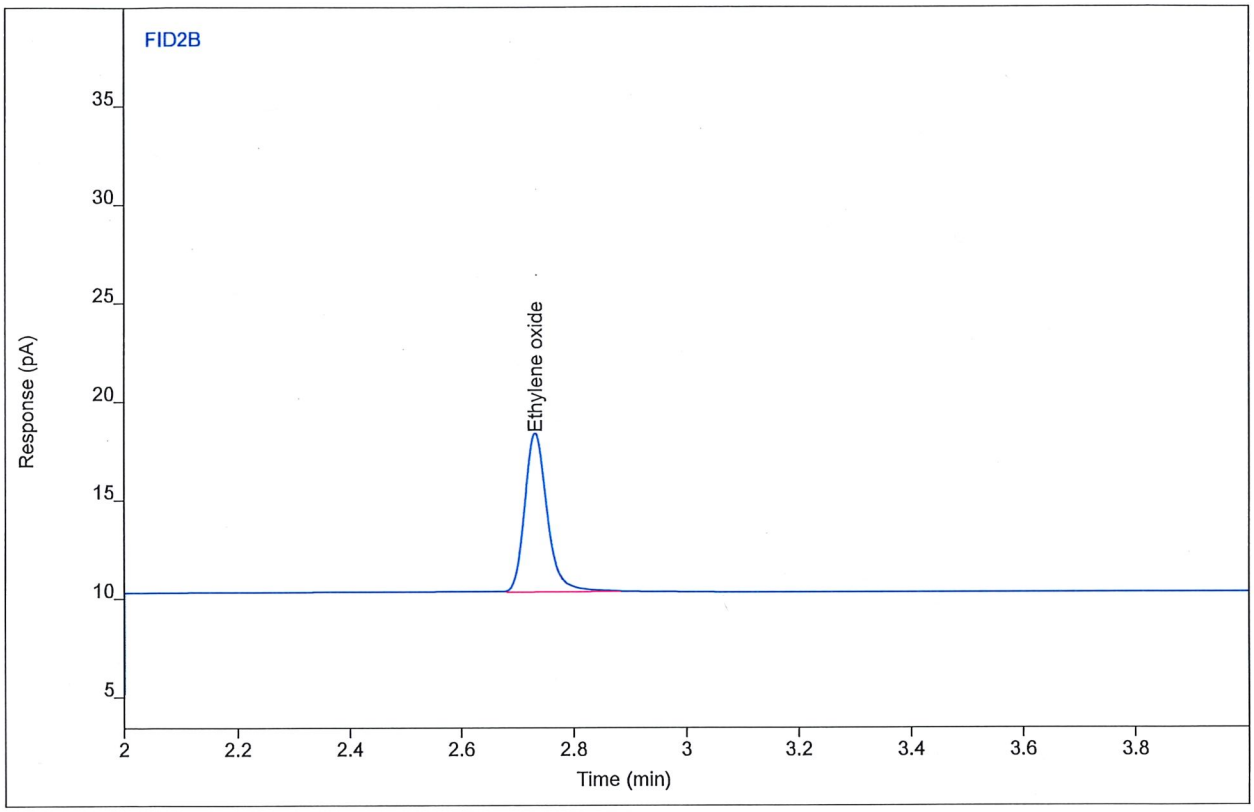
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	22.5202	8.13020	58.7302	21	1233.33	ppm

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU SP.Bag
Sequence Name	BETTYP1042A ver.2
Inj Data File	019B1402.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 11:20 AM
File Modified	2/15/2019 1:44 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 19
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



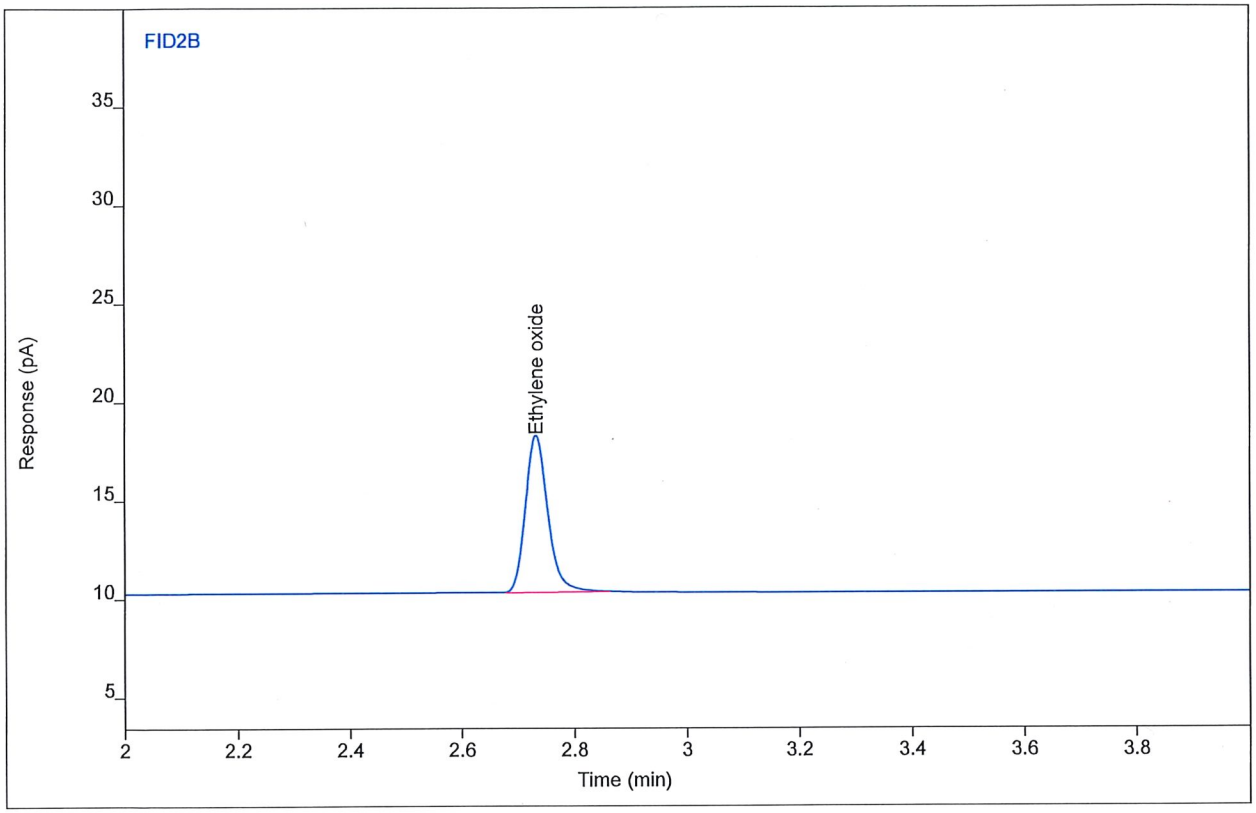
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	22.5407	8.08496	58.7830	21	1234.44	ppm

Chromatogram Report

Sample Name	0119-148.r013119 IN D 1-1 BU SP.Bag
Sequence Name	BETTYP1042A ver.2
Inj Data File	019B1403.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 11:31 AM
File Modified	2/15/2019 1:44 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 19
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



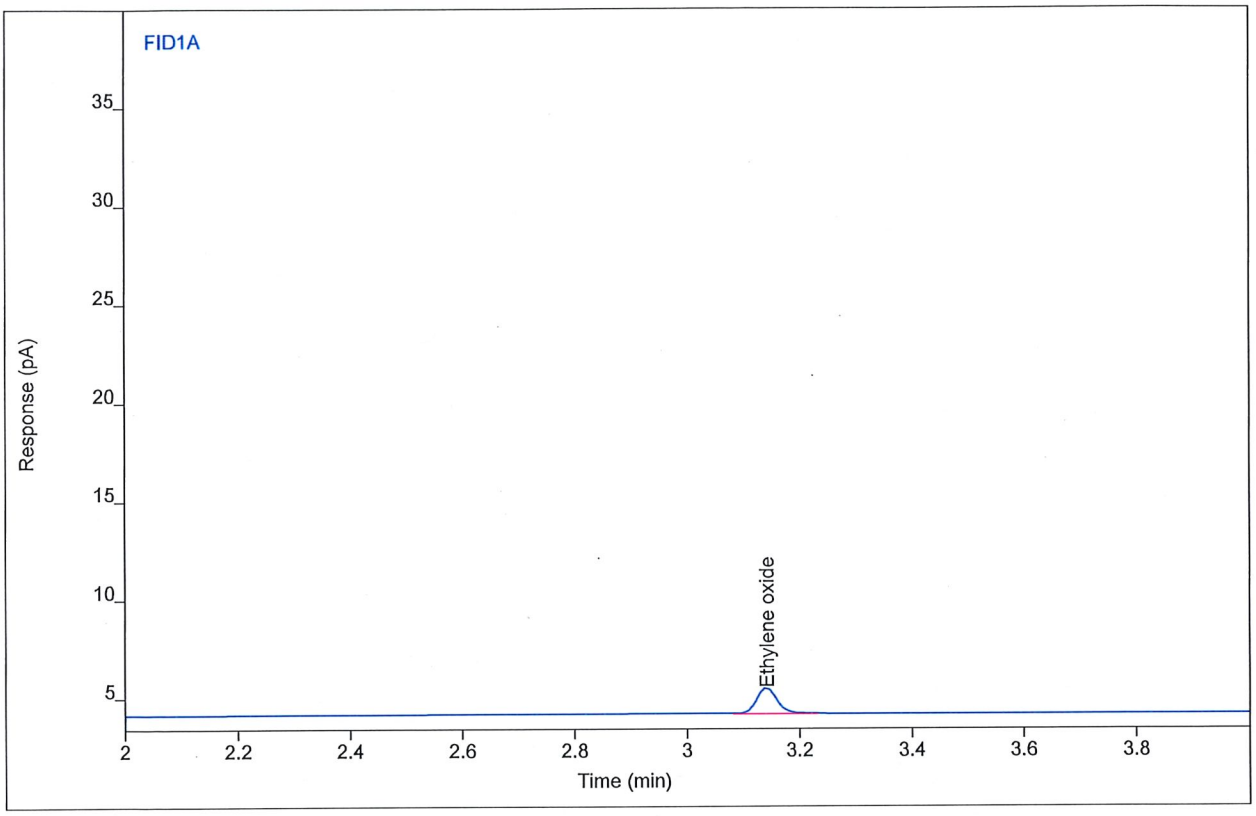
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	22.0515	7.98737	57.5176	21	1207.87	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 2-2 SP.Bag
Sequence Name	GUMMOP1540 ver.3
Inj Data File	007F0501.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 3:46 PM
File Modified	2/18/2019 6:26 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	1 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



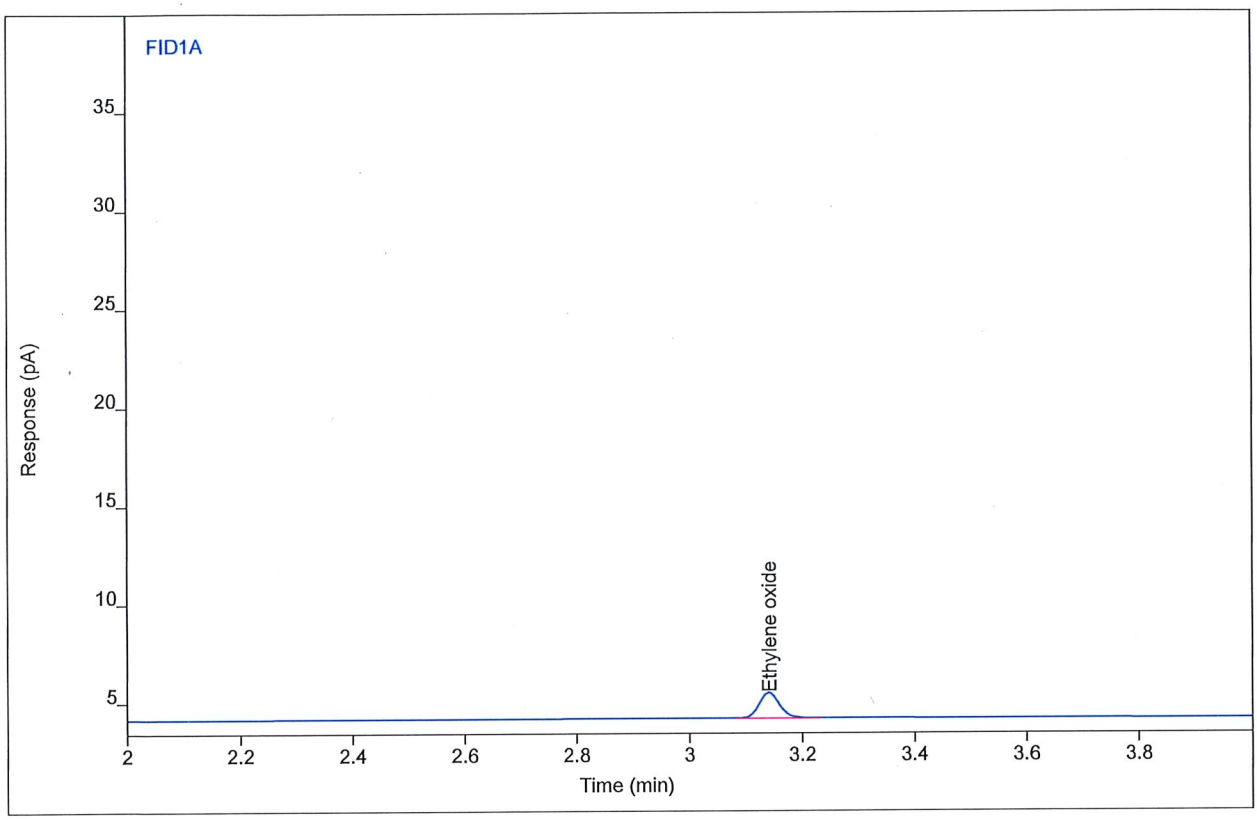
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	3.35883	1.26945	17.4971	1	17.4971	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 2-2 SP.Bag
Sequence Name	GUMMOP1540 ver.3
Inj Data File	007F0502.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 3:53 PM
File Modified	2/18/2019 6:26 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	2 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



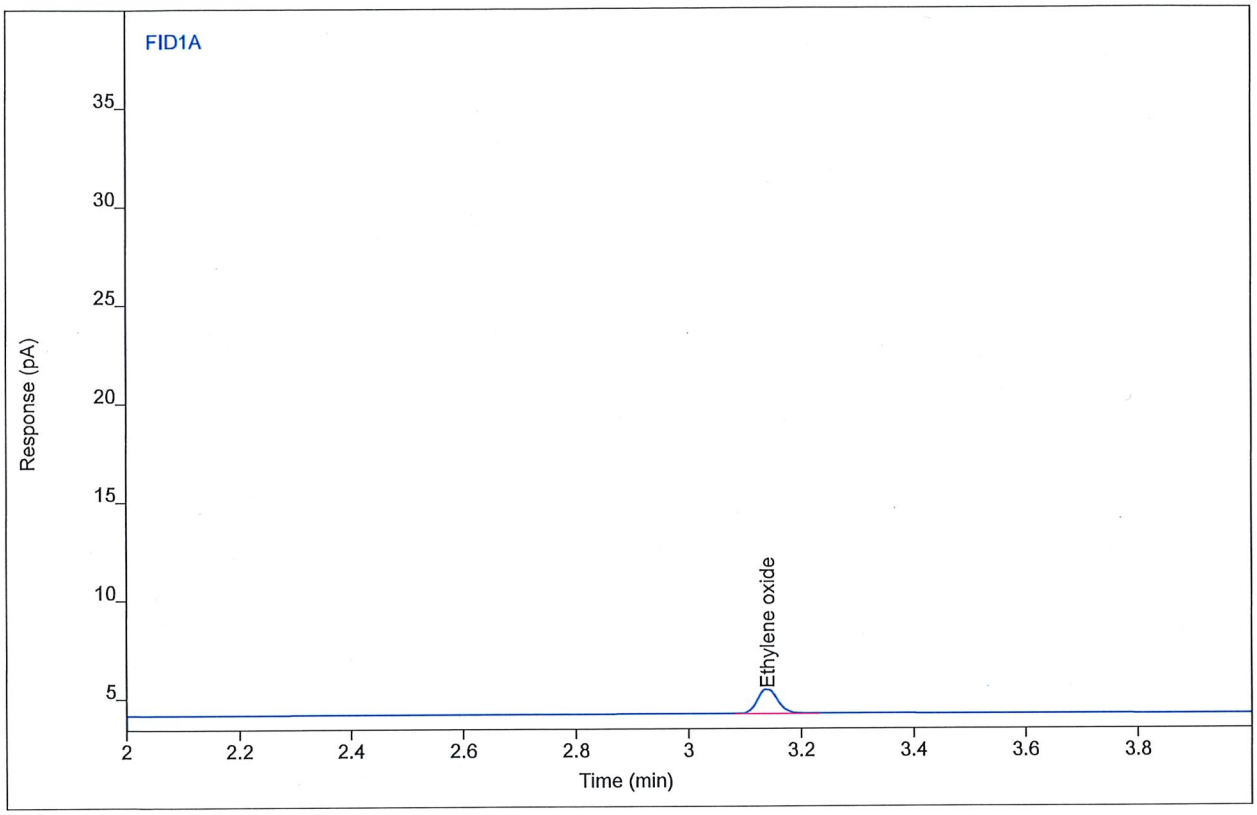
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	3.31310	1.26852	17.2599	1	17.2599	ppm

Chromatogram Report

Sample Name	0119-148.r013119 E Outlet 2-2 SP.Bag
Sequence Name	GUMMOP1540 ver.3
Inj Data File	007F0503.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 4:00 PM
File Modified	2/18/2019 6:26 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 7
Injection Volume	1000
Injection	3 of 3
Acquisition Method	AQ_GUMMOP1466_AA.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	3.25922	1.25025	16.9805	1	16.9805	ppm

Enthalpy Analytical

Company: Air Monitoring Specialists, Inc.

Job No.: 0119-148 - EPA Method 18 (Bags)

Client No.: Bayside - Abator D & E

Ethylene oxide -- Calibration Standards

SAMPLE ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc. # 1 (ppmv)	Conc. # 2 (ppmv)	Conc. # 3 (ppmv)	%dif conc	Avg. Conc. (ppmv)	Standard Tag	% Tag
BettyP1029 #SC3 ENV(1=636,6=400)	025B0101.D	025B0102.D	025B0103.D	BETTYP957_EO.M	2.73	2.73	2.73	0.0	75.8	76.7	76.9	0.8	76.5	78.8	97.1
BettyP1029 #SC3 ENV(1=636,6=400)	025B1701.D	025B1702.D	025B1703.D	BETTYP957_EO.M	2.74	2.73	2.74	0.0	75.3	73.3	73.5	1.7	74.1	78.8	94.0
BettyP1029 #SC3 ENV(1=636,6=400)	025B0902.D	025B0903.D	025B0904.D	BETTYP1042_EO.M	2.73	2.73	2.73	0.0	77.9	77.8	77.7	0.2	77.8	78.8	98.8
BettyP1029 #SC3 ENV(1=636,6=400)	025B1501.D	025B1502.D	025B1503.D	BETTYP1042_EO.M	2.73	2.73	2.73	0.0	80.5	78.9	77.1	2.2	78.9	78.8	100
gummop1536 #EO3 ENV(1=600,4=410)	016F0702.D	016F0703.D	016F0704.D	GUMMOP1536F_EO.M	3.15	3.15	3.15	0.0	101	101	101	0.4	101	98.5	102
zero air blank #LB	008F0801.D	008F0802.D	008F0803.D	GUMMOP1536F_EO.M	NA	NA	NA	NA	0.513	0.513	0.513	0	0.513	ND	
gummop1536 #EO3 ENV(1=600,4=410)	016F1202.D	016F1203.D	016F1204.D	GUMMOP1536F_EO.M	3.15	3.15	3.16	0.1	106	106	110	2.3	108	98.5	109
gummop1536 #EO3 ENV(1=600,4=410)	016F1302.D	016F1303.D	016F1304.D	GUMMOP1536F_EO.M	3.15	3.15	3.15	0.0	109	107	107	1.1	108	98.5	109
gummop1536 #EO3 ENV(1=600,4=410)	016F2302.D	016F2303.D	016F2304.D	GUMMOP1536F_EO.M	3.15	3.15	3.15	0.0	106	107	106	0.7	107	98.5	108
gummop1536 #EO3 ENV(1=600,4=410)	016F0602.D	016F0603.D	016F0604.D	GUMMOP1536F_EO.M	3.14	3.14	3.14	0.0	106	106	105	0.5	106	98.5	108
gummop1536 #EO3 ENV(1=600,4=410)	016F0902.D	016F0903.D	016F0904.D	GUMMOP1536F_EO.M	3.15	3.15	3.15	0.0	101	101	102	0.4	101	98.5	103
gummop1536 #EO3 ENV(1=600,4=410)	016F0302.D	016F0303.D	016F0304.D	GUMMOP1536F_EO.M	3.14	3.14	3.14	0.0	100	100	100	0.2	100	98.5	102
gummop1536 #EO3 ENV(1=600,4=410)	016F1401.D	016F1402.D	016F1403.D	GUMMOP1536F_EO.M	3.15	3.15	3.14	0.0	97.5	98.3	99.3	0.9	98.4	98.5	99.9

Calibration Table

Calib. Data Modified : 11/20/2018 11:23:13 AM

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : using compound Ethylene oxide
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
2.731	1	1	4.85000	1.67100	2.90245			Ethylene oxide
		2	24.26000	9.07357	2.67370			
		3	80.87000	28.53073	2.83449			
		4	242.60000	80.34795	3.01937			

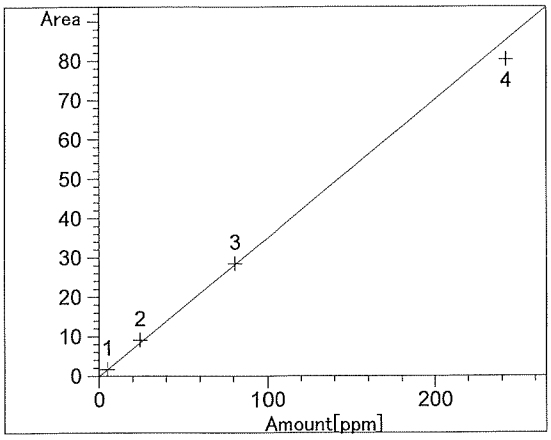
More compound-specific settings:

Compound: Ethylene oxide
Time Window : From 2.685 min To 2.750 min

Peak Sum Table

No Entries in table

Calibration Curves



Ethylene oxide at exp. RT: 2.731
FID2 B,
Correlation: 0.99840
Residual Std. Dev.: 3.49505
Formula: y = mx + b
m: 3.51485e-1
b: -1.28762e-2
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.039967
Level 3 : 0.003597
Level 4 : 0.0004

mple Name: BettyP957 #EO4 ENV(1=0,6=499)

```
================================================================================
Acq. Operator    : Justin Guenzler                  Seq. Line :   3
Acq. Instrument  : Betty                             Location : Vial 25
Injection Date   : 11/16/2018 11:26:24 AM                Inj :   1
                                                   Inj Volume : 250 µl
Acq. Method      : C:\GC\2018\BETTY\QUARTER 4\BETTYP957\GC142P133_CAL.M
Last changed     : 10/18/2017 9:57:08 AM by Justin Guenzler
Analysis Method  : C:\GC\2018\BETTY\METHODS\BETTYP957_EO.M
Last changed     : 11/21/2018 12:33:46 PM by Nicholas Traversa
ECM Server       : http://s022vas01/Enthalpy
ECM Operator     : Nicole West
ECM Path         : GC\2018\Betty\Quarter 4\BETTYP957.SC.SSIzip
ECM Version      : 2 (modified after loading)
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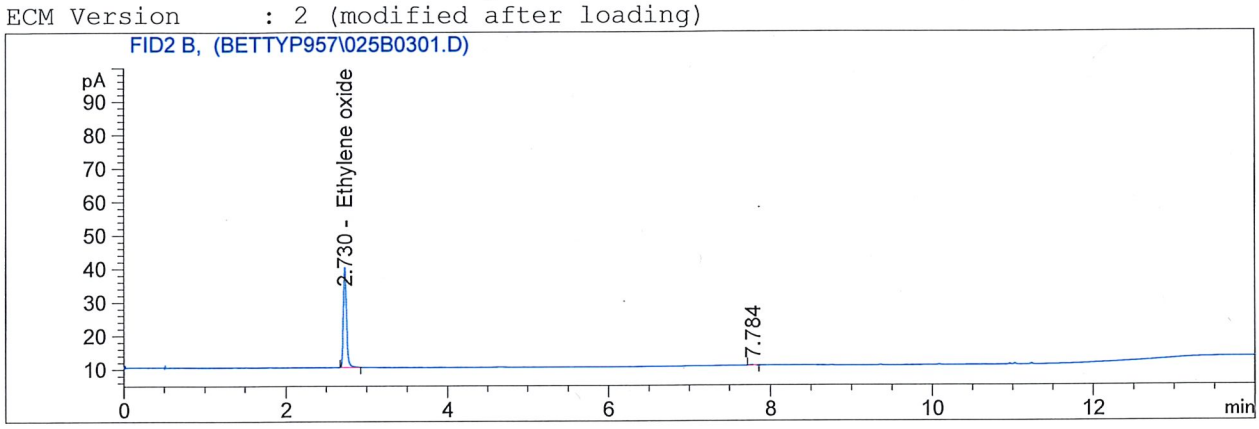



```
================================================================================
                        External Standard Report
================================================================================

Sorted By             :      Signal
Calib. Data Modified  :      11/20/2018 11:23:13 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          [pA*s]                 [ppm]
-------|------|----------|----------|----------|--|------------------
  2.730 BB       80.43060    2.84553  228.86729    Ethylene oxide

Totals :                                228.86729

Uncalibrated Peaks    :      using compound Ethylene oxide

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          [pA*s]                 [ppm]
-------|------|----------|----------|----------|--|------------------
  7.784 BB     3.49074e-1    2.86672    1.00070    ?

Uncalib. totals :                       1.00070


================================================================================
                          Summed Peaks Report
================================================================================

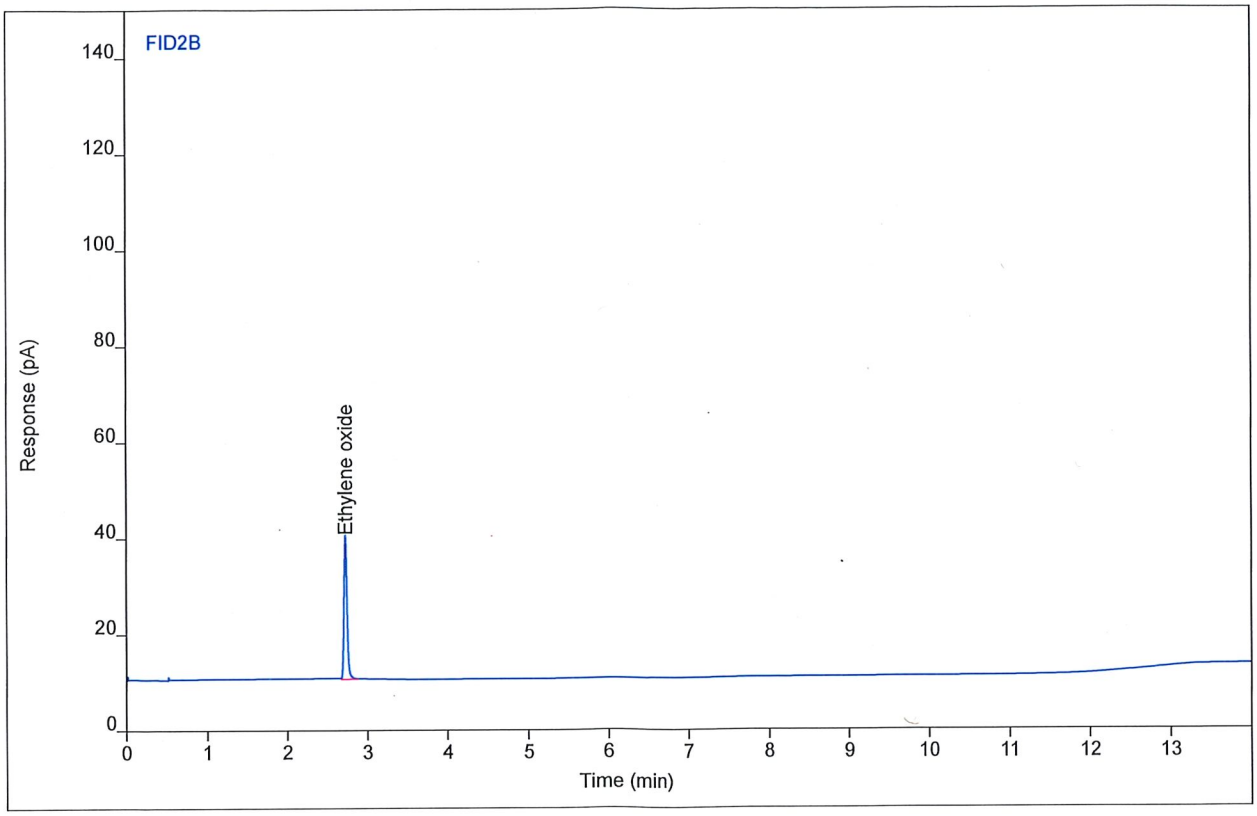
Signal 1: FID2 B,
```

Chromatogram Report

Sample Name	BettyP957 #EO4 ENV(1=0,6=499)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0302.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 11:51 AM
File Modified	11/20/2018 9:39 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



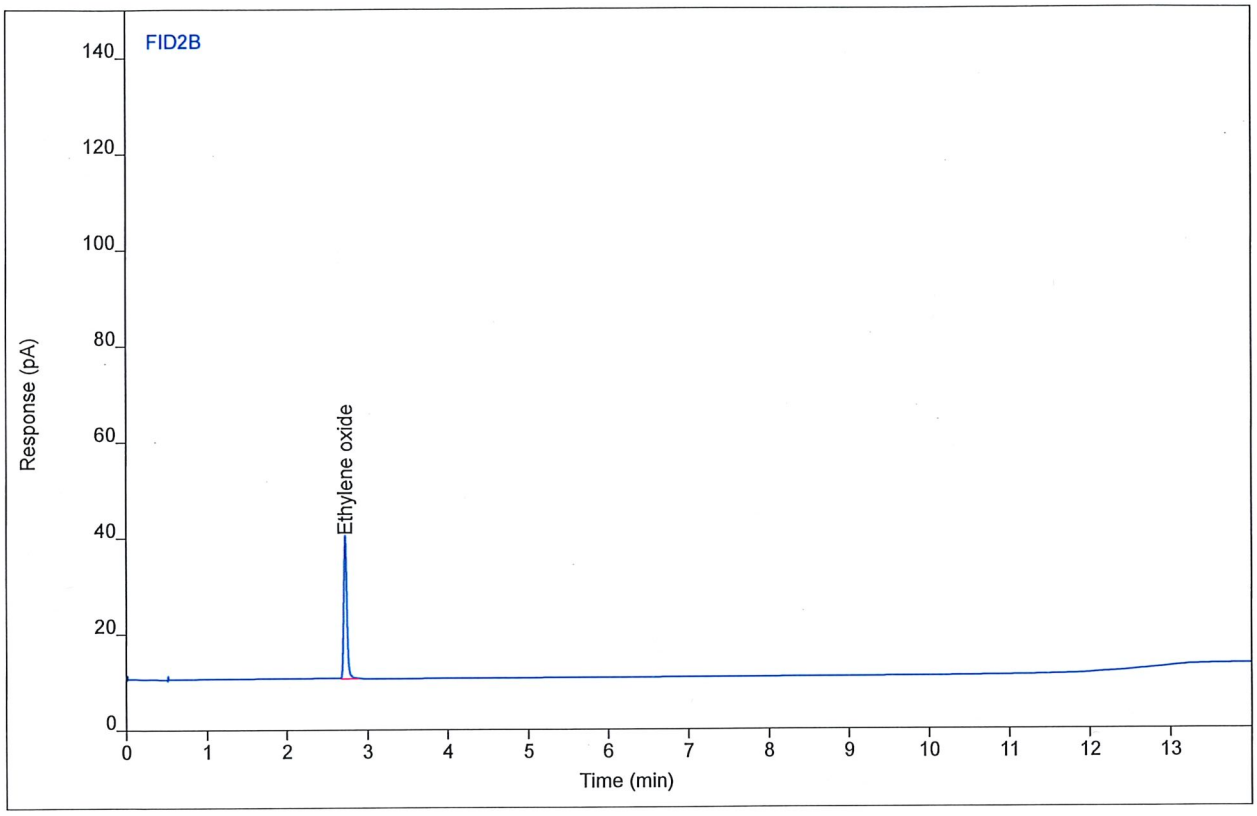
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	80.4440	29.9562	228.905	1	228.905	ppm

Chromatogram Report

Sample Name	BettyP957 #EO4 ENV(1=0,6=499)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0303.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 12:15 PM
File Modified	11/20/2018 9:39 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



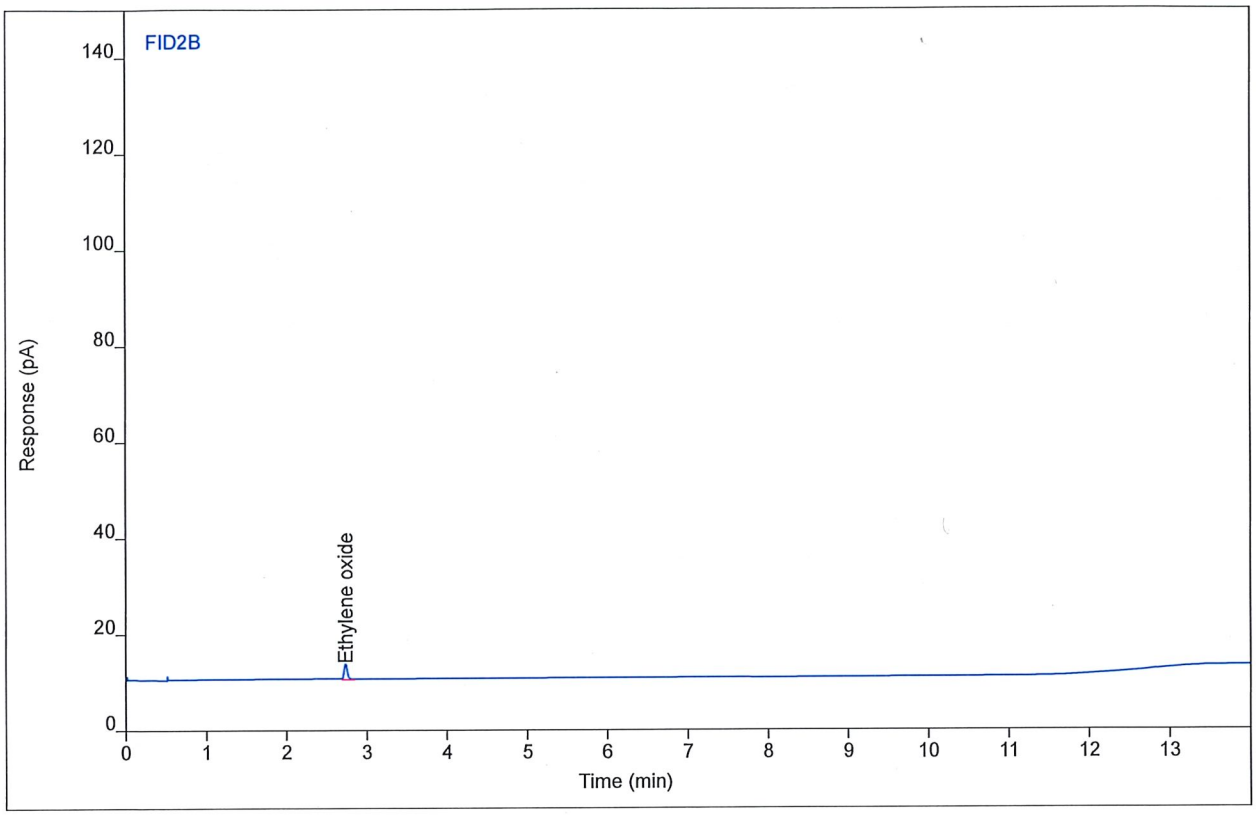
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	80.1692	29.8403	228.124	1	228.124	ppm

Chromatogram Report

Sample Name	BettyP957 #EO2 ENV(1=954,6=150)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0502.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 3:08 PM
File Modified	11/20/2018 9:39 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



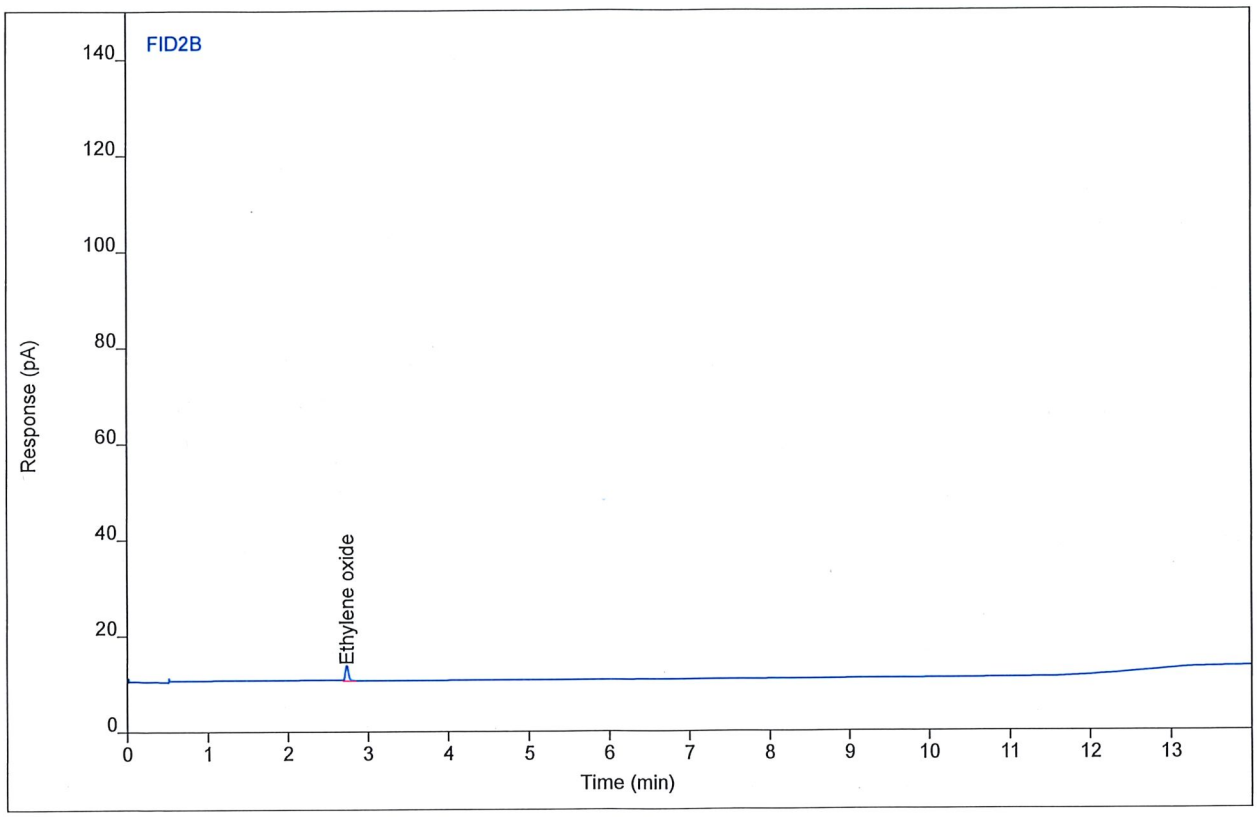
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.07502	3.29159	25.8557	1	25.8557	ppm

Chromatogram Report

Sample Name	BettyP957 #EO2 ENV(1=954,6=150)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0503.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 3:33 PM
File Modified	11/20/2018 9:39 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



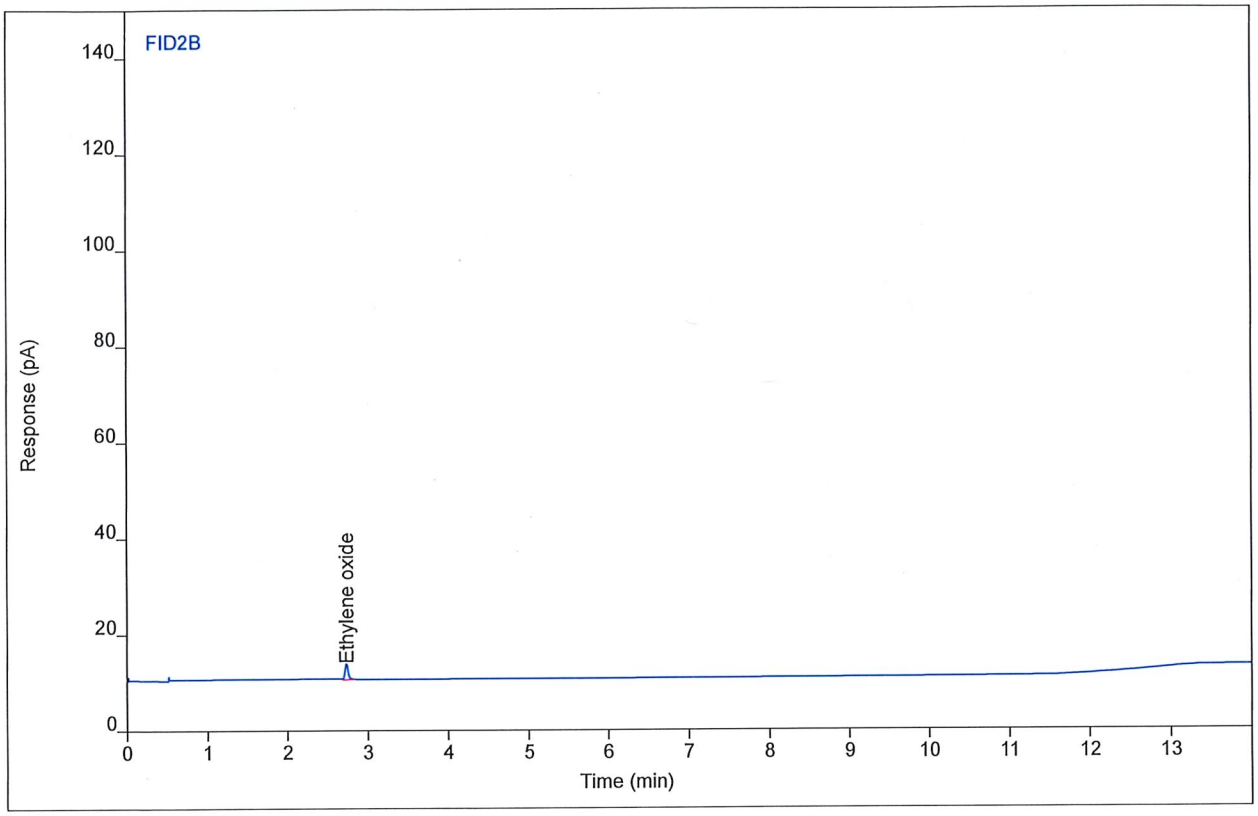
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.12168	3.31035	25.9884	1	25.9884	ppm

Chromatogram Report

Sample Name	BettyP957 #EO2 ENV(1=954,6=150)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0504.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 3:58 PM
File Modified	11/20/2018 9:39 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	4 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



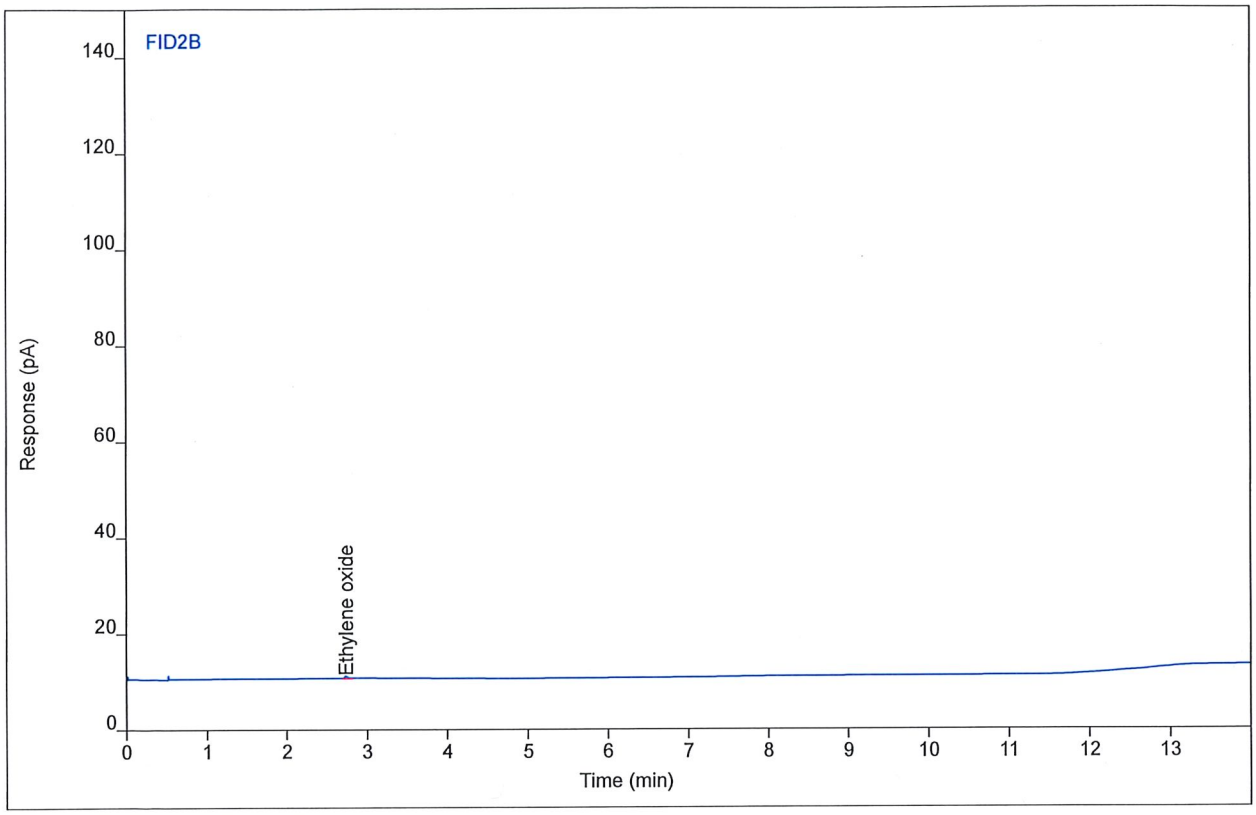
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.02403	3.29227	25.7106	1	25.7106	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP957 #EO1 ENV(1=2770.12,6=80)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0606.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 6:26 PM
File Modified	11/20/2018 9:40 AM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	6 of 8
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



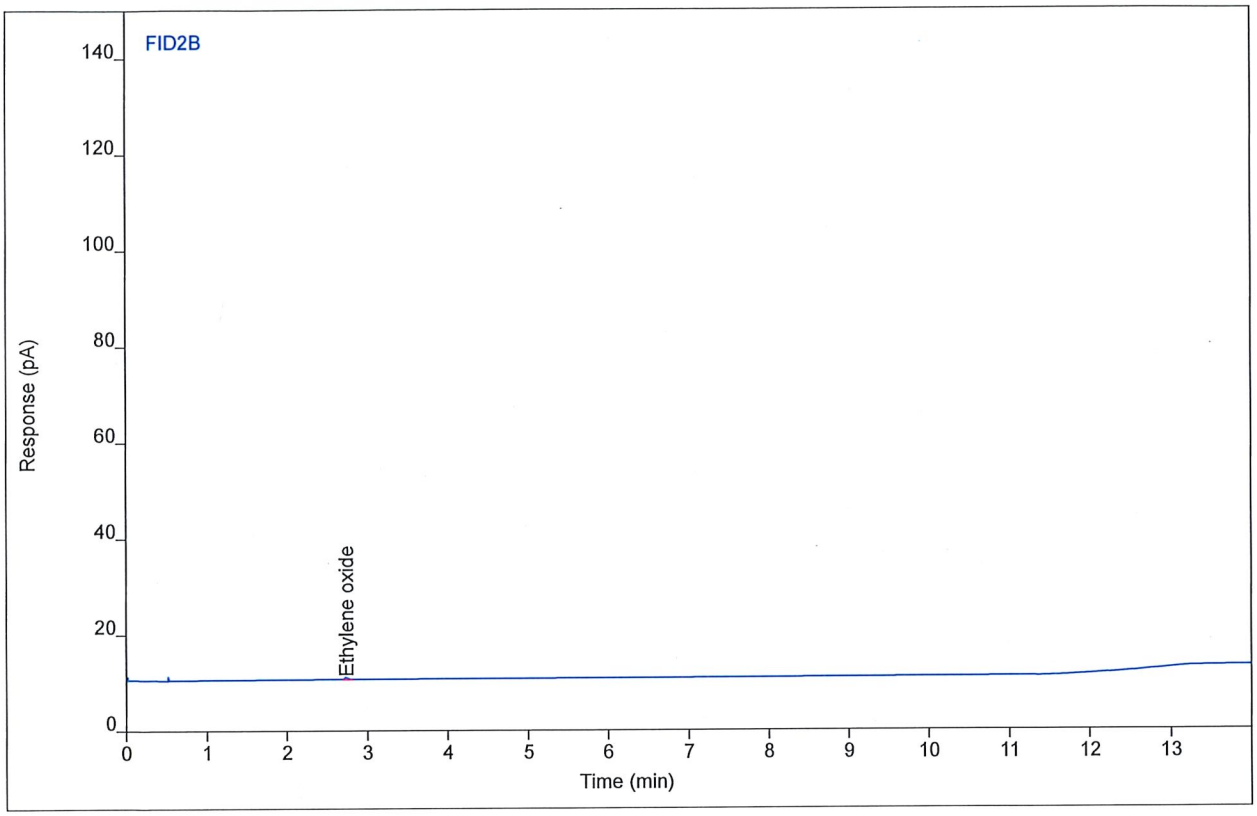
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.68674	0.59709	4.83541	1	4.83541	ppm

Chromatogram Report

Sample Name	BettyP957 #EO1 ENV(1=2770.12,6=80)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0607.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 6:50 PM
File Modified	11/20/2018 9:40 AM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	7 of 8
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



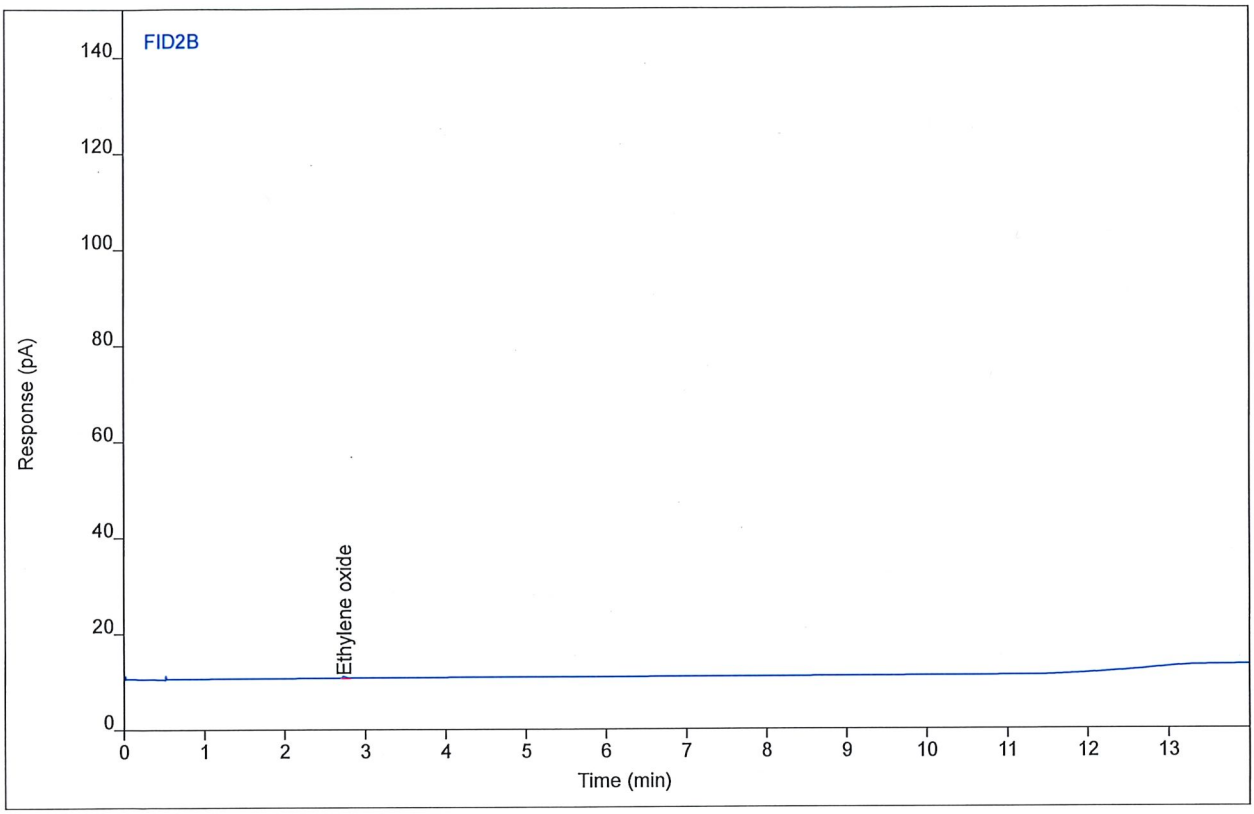
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.66064	0.59885	4.76061	1	4.76061	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP957 #EO1 ENV(1=2770.12,6=80)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B0608.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/16/2018 7:15 PM
File Modified	11/20/2018 9:40 AM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	8 of 8
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



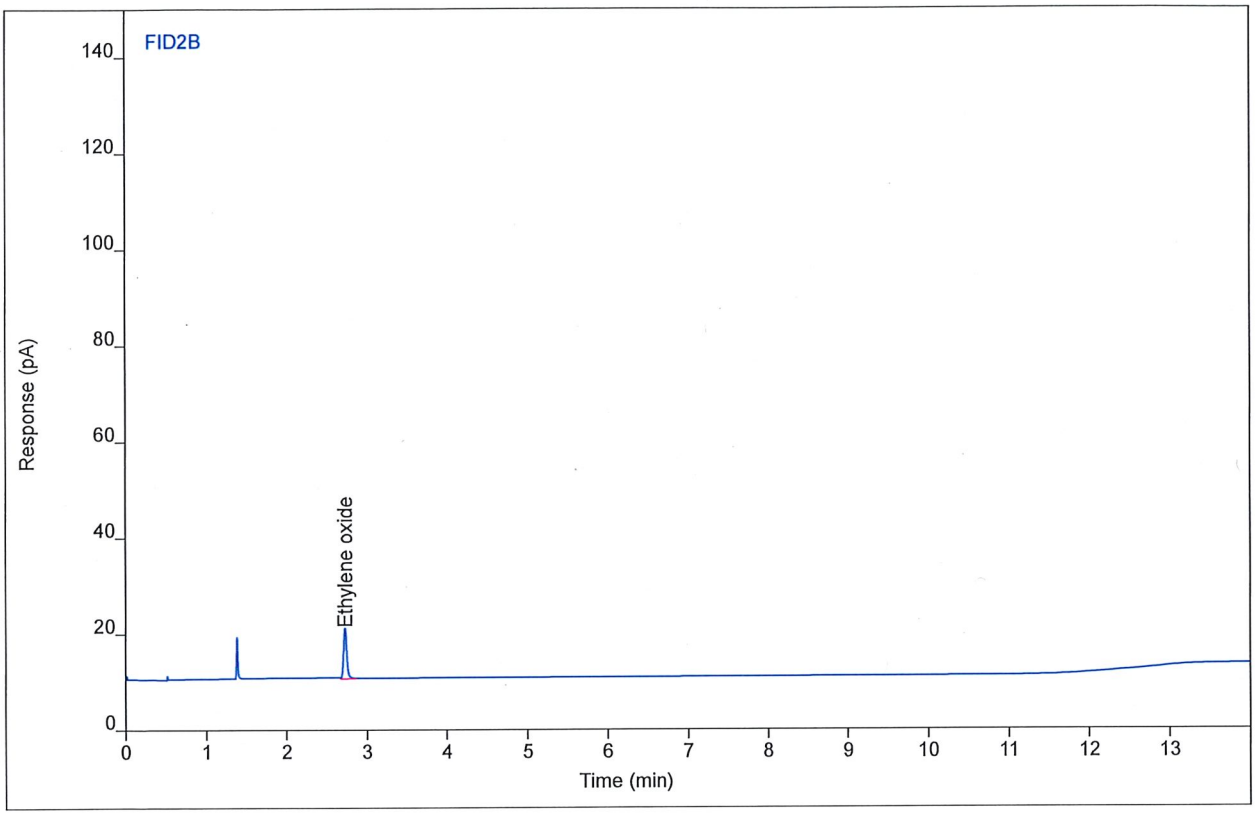
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.66563	0.59604	4.77489	1	4.77489	ppm

Chromatogram Report

Sample Name	BettyP957 #EO3 ENV(1=565.33,6=400)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B1802.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/19/2018 8:45 AM
File Modified	11/20/2018 9:41 AM
Instrument	Betty
Operator	Nicholas Traversa

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



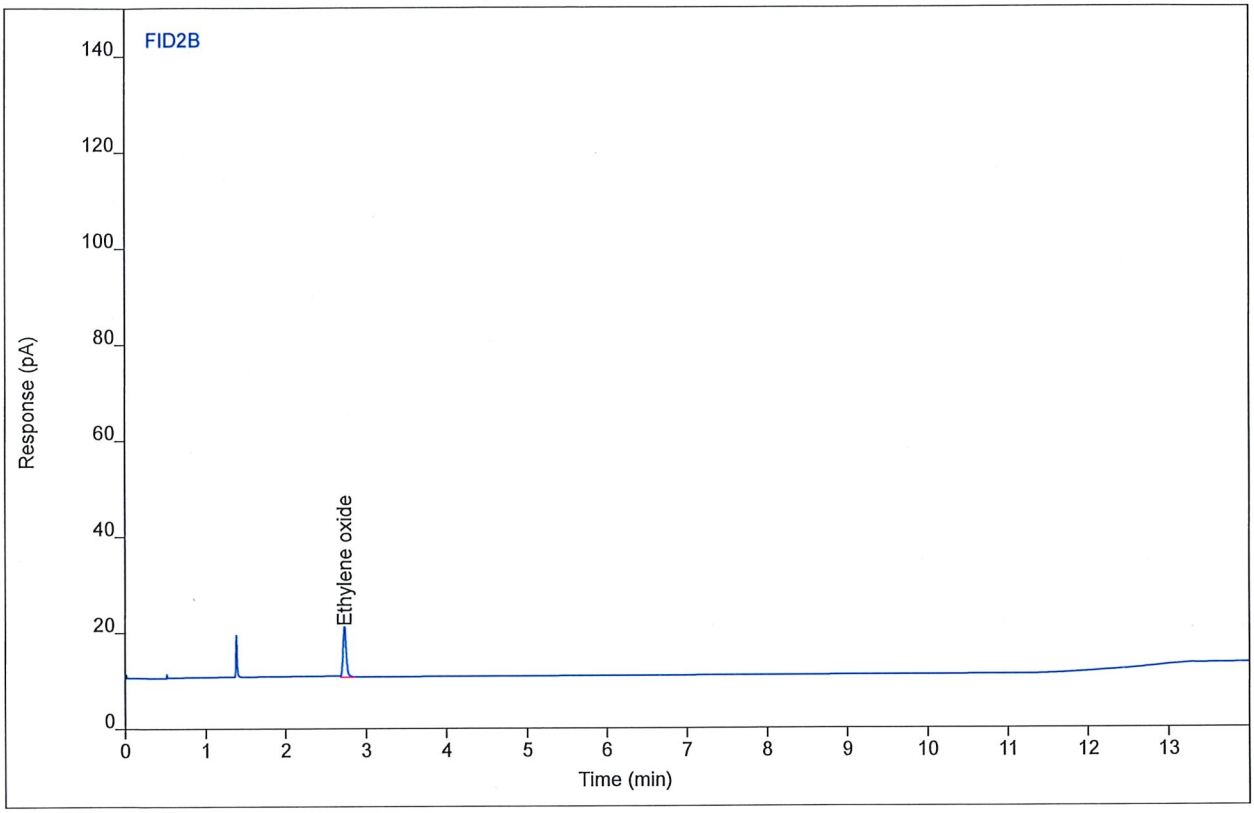
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	2.73	28.6763	10.6097	81.6228	1	81.6228	ppm

Chromatogram Report

Sample Name	BettyP957 #EO3 ENV(1=565.33,6=400)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B1803.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/19/2018 9:10 AM
File Modified	11/20/2018 9:41 AM
Instrument	Betty
Operator	Nicholas Traversa

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



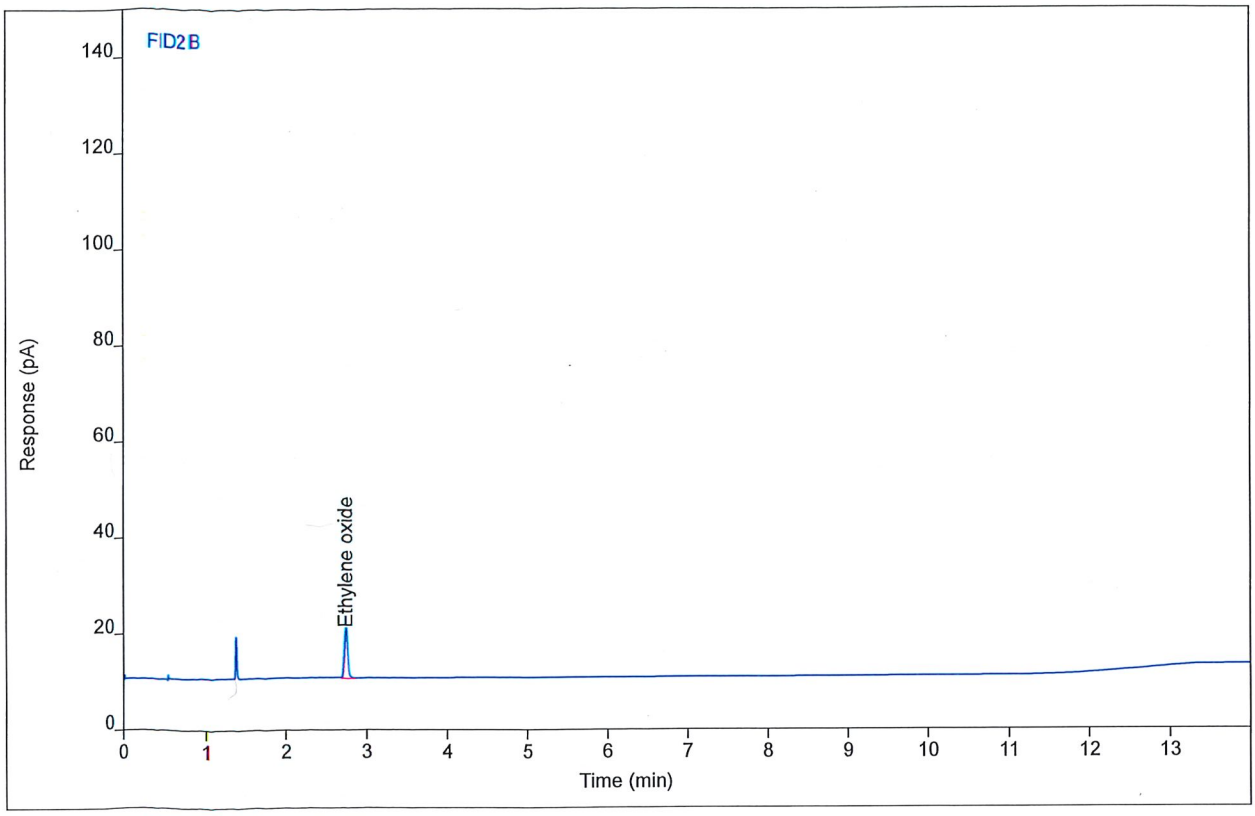
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	2.73	28.5996	10.5987	81.4045	1	81.4045	ppm

Chromatogram Report

Sample Name	BettyP957 #EO3 ENV(1=565.33,6=400)
Sequence Name	BETTYP957 ver.2
Inj Data File	025B1804.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	11/19/2018 9:35 AM
File Modified	11/20/2018 9:41 AM
Instrument	Betty
Operator	Nicholas Traversa

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	4 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	11/19/2018 9:56 AM
Printed	11/21/2018 12:24 PM



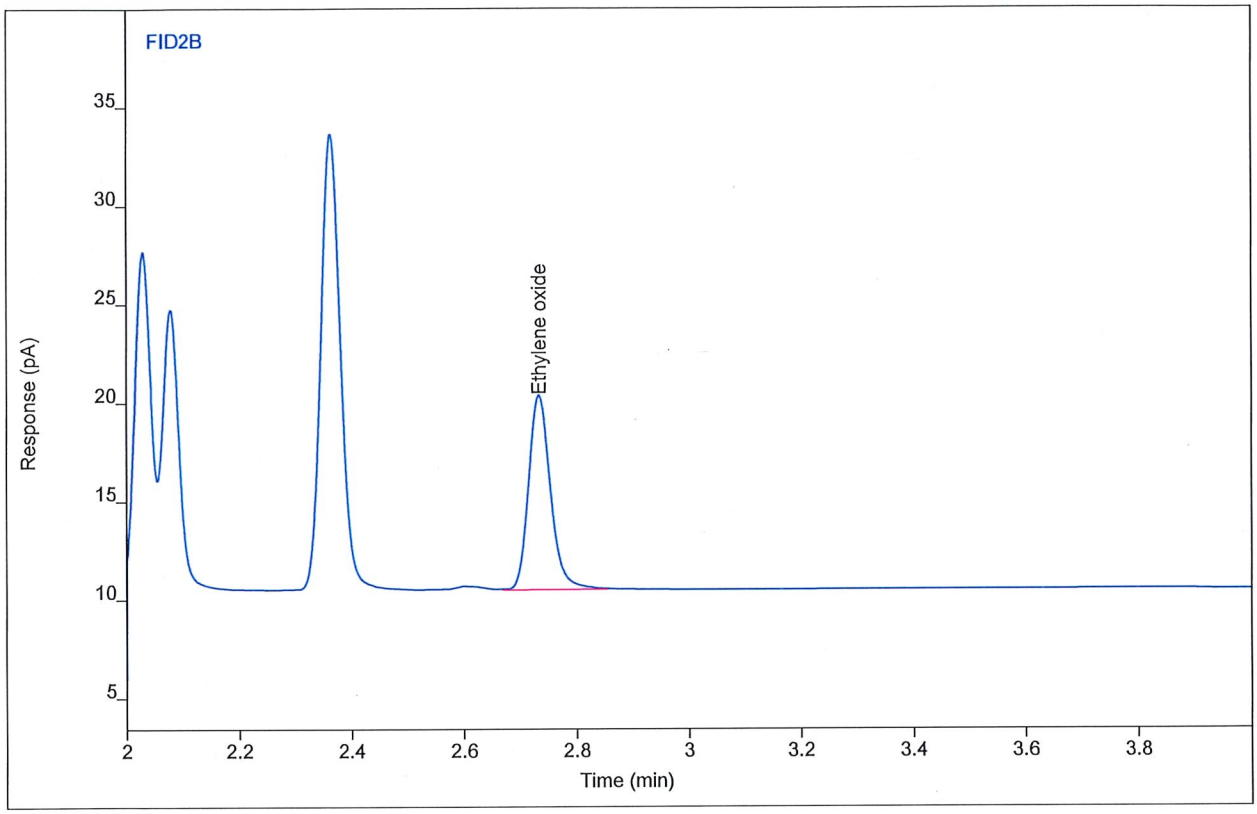
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	MM	2.73	28.3162	10.5413	80.5982	1	80.5982	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B0101.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 7:35 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



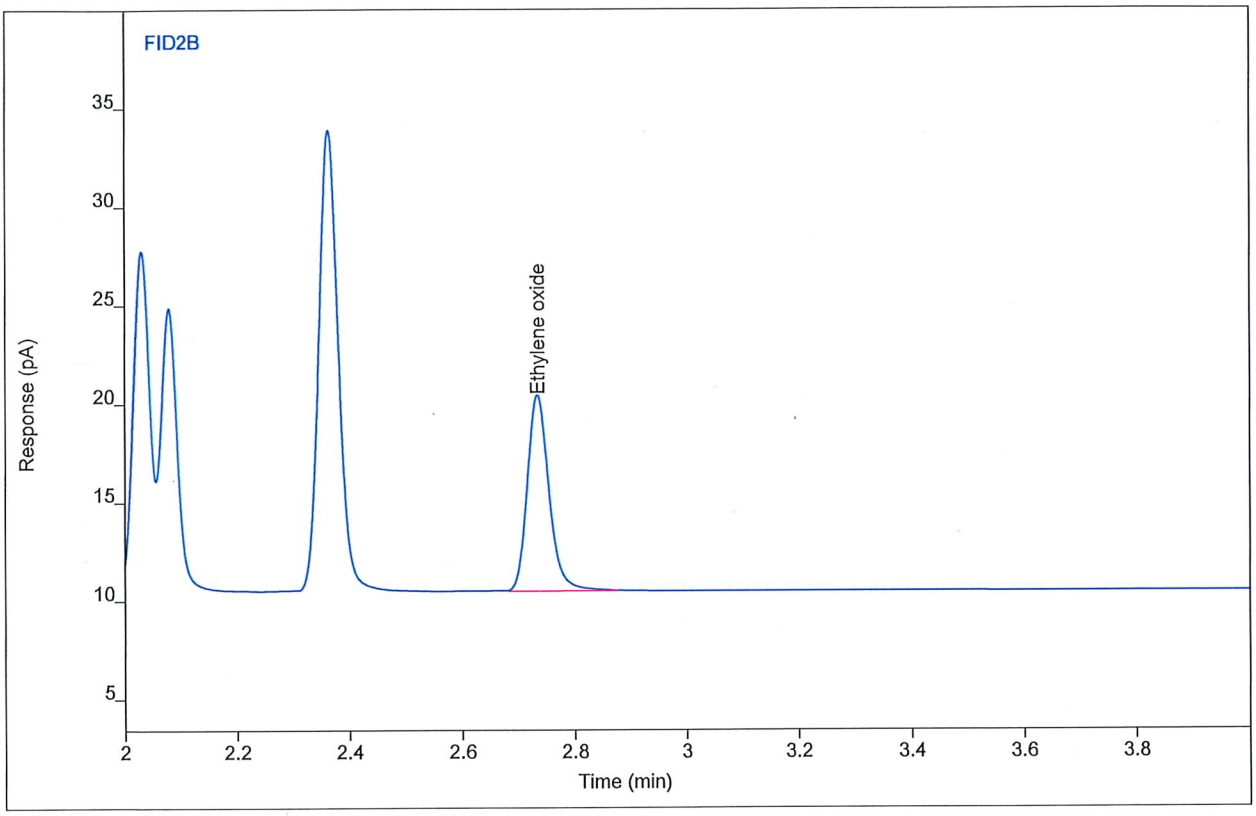
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	2.73	26.6351	9.85863	75.8154	1	75.8154	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B0102.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 7:47 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



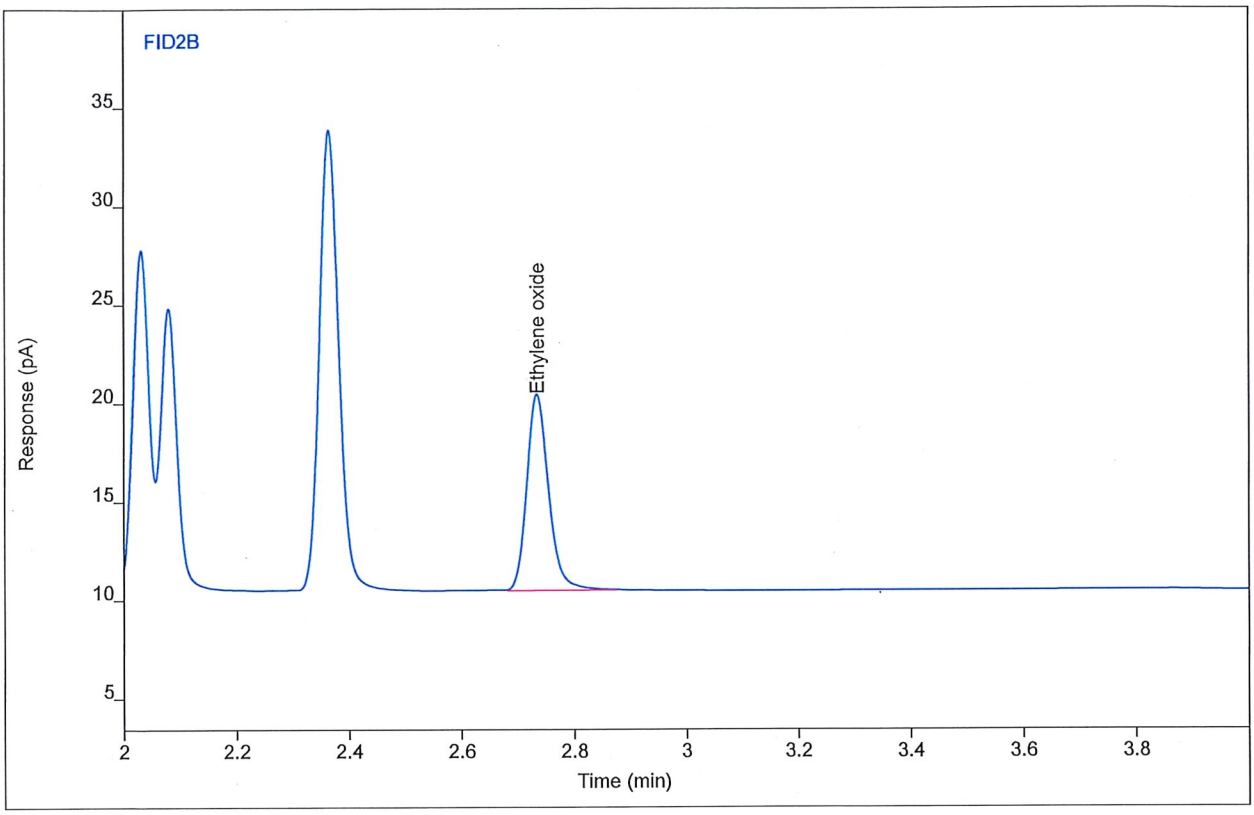
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	26.9394	9.94203	76.6811	1	76.6811	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B0103.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 8:15 AM
File Modified	2/14/2019 11:18 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL_SHORT.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



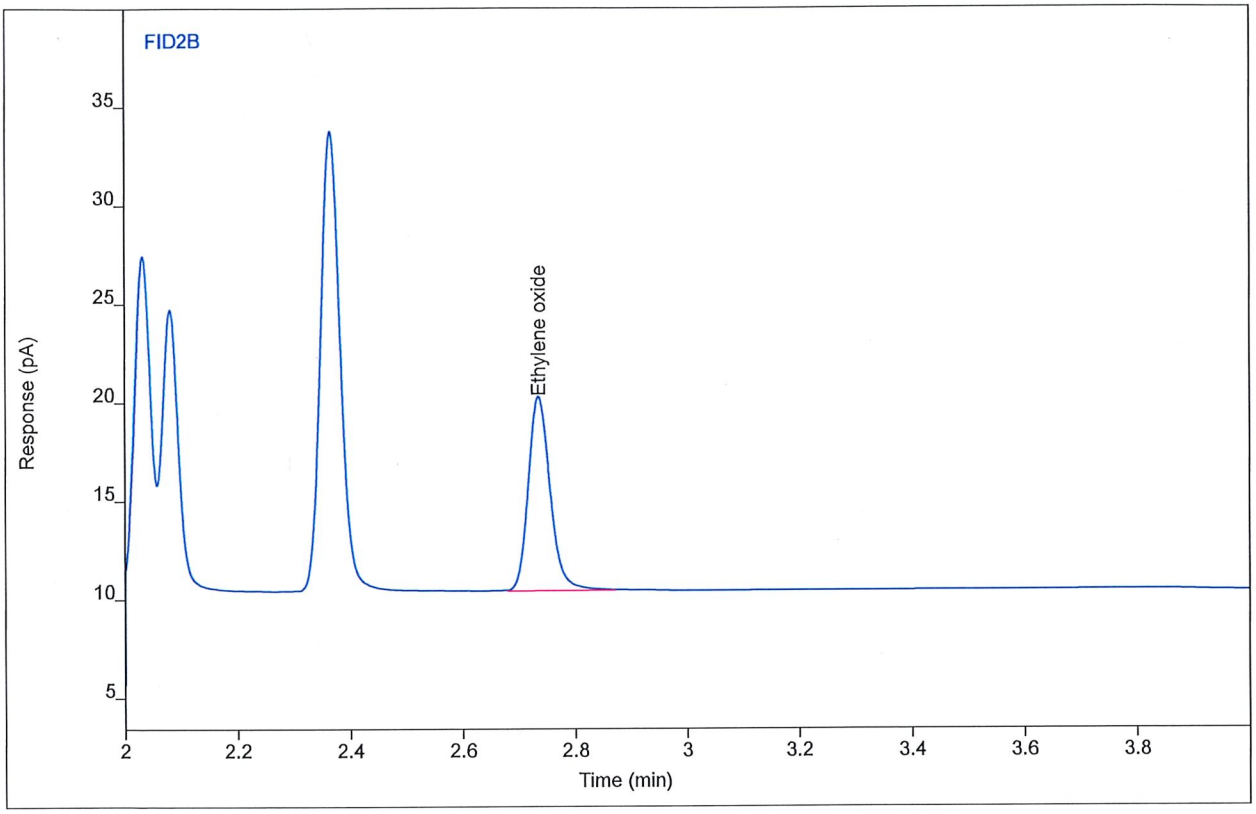
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	27.0040	9.95495	76.8648	1	76.8648	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B1701.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 1:34 PM
File Modified	2/14/2019 11:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



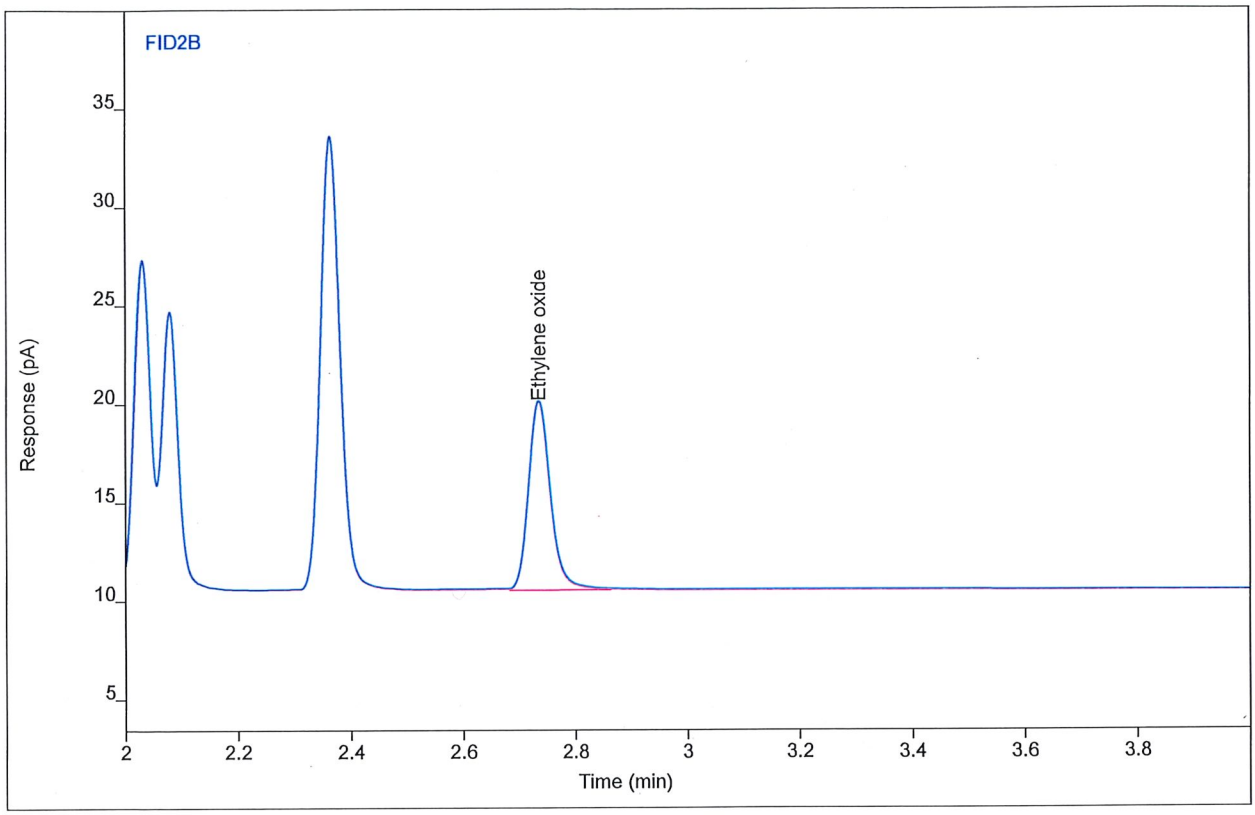
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	26.4582	9.84533	75.3119	1	75.3119	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B1702.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 1:59 PM
File Modified	2/14/2019 11:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



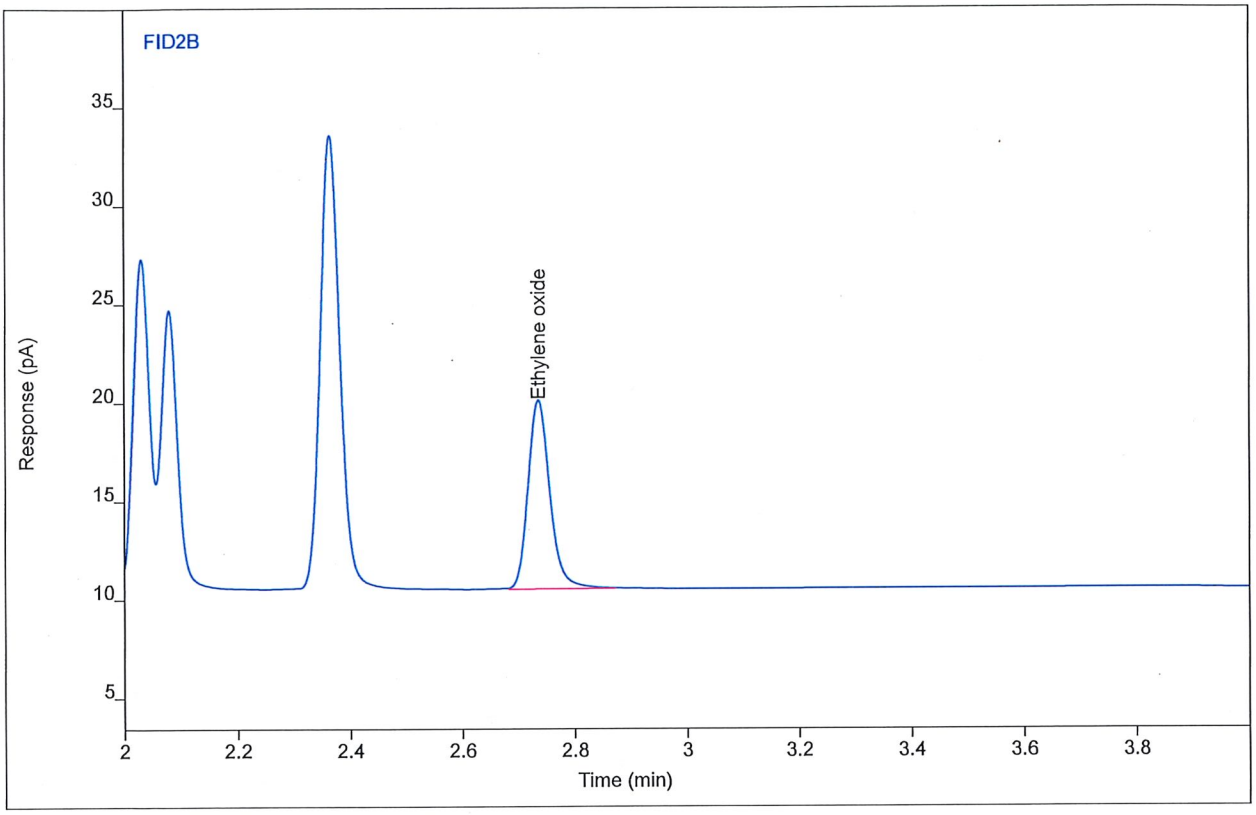
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	25.7623	9.57694	73.3321	1	73.3321	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1029 ver.3
Inj Data File	025B1703.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/7/2019 2:24 PM
File Modified	2/14/2019 11:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP957_EO.M
Method Modified	2/14/2019 11:18 AM
Printed	2/18/2019 7:25 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	25.8387	9.56792	73.5495	1	73.5495	ppm

Calibration Table

Calib. Data Modified : 2/14/2019 11:47:34 AM

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : using compound Ethylene oxide
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
2.738	1	1	5.12000	1.79174	2.85756			Ethylene oxide
		2	25.60000	9.77407	2.61917			
		3	78.77000	30.85963	2.55253			
		4	256.00000	96.44357	2.65440			

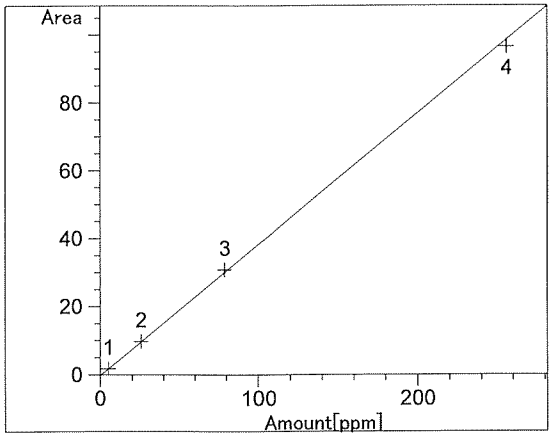
More compound-specific settings:

Compound: Ethylene oxide
Time Window : From 2.691 min To 2.757 min

Peak Sum Table

No Entries in table

Calibration Curves



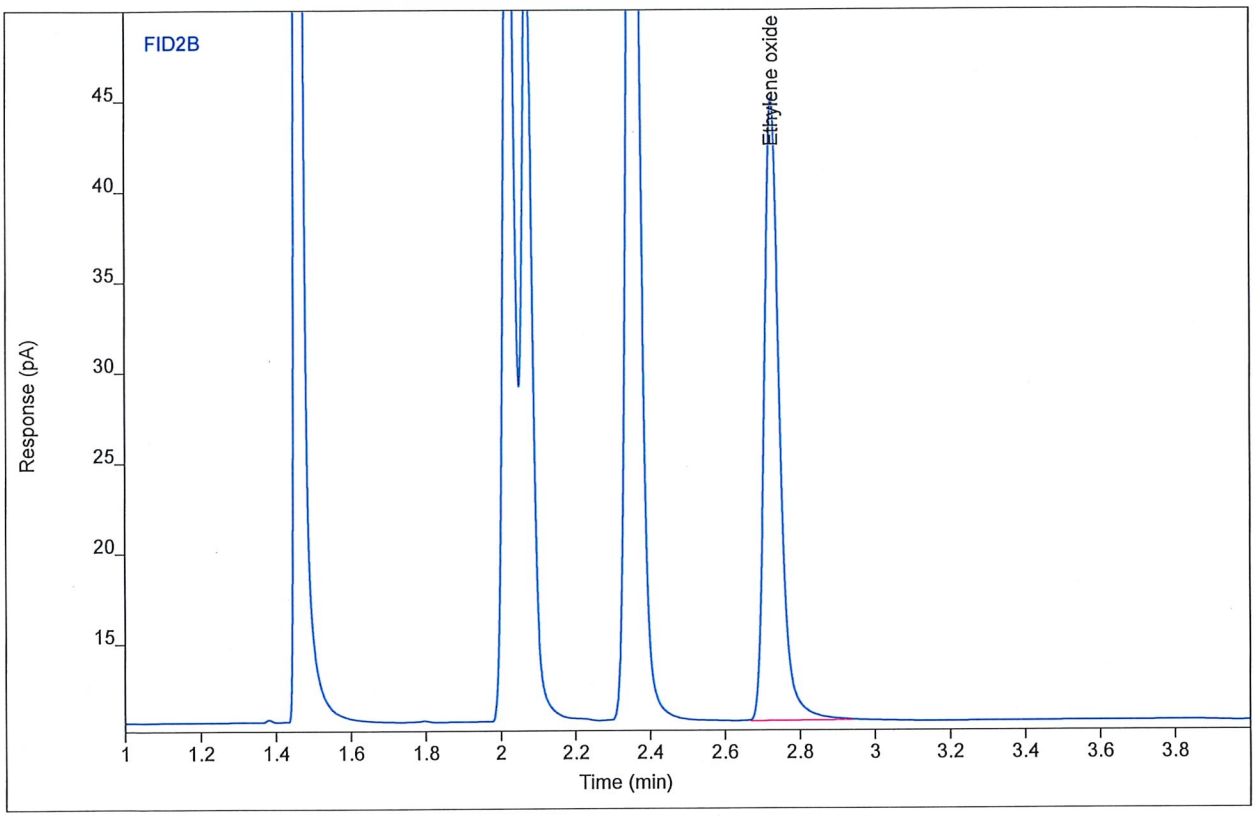
Ethylene oxide at exp. RT: 2.738
FID2 B,
Correlation: 0.99980
Residual Std. Dev.: 1.70515
Formula: y = mx + b
m: 3.86577e-1
b: -1.83523e-1
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.04
Level 3 : 0.004225
Level 4 : 0.0004

Chromatogram Report

Sample Name	BettyP1029 #SC4 ENV(1=0,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0201.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 7:00 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



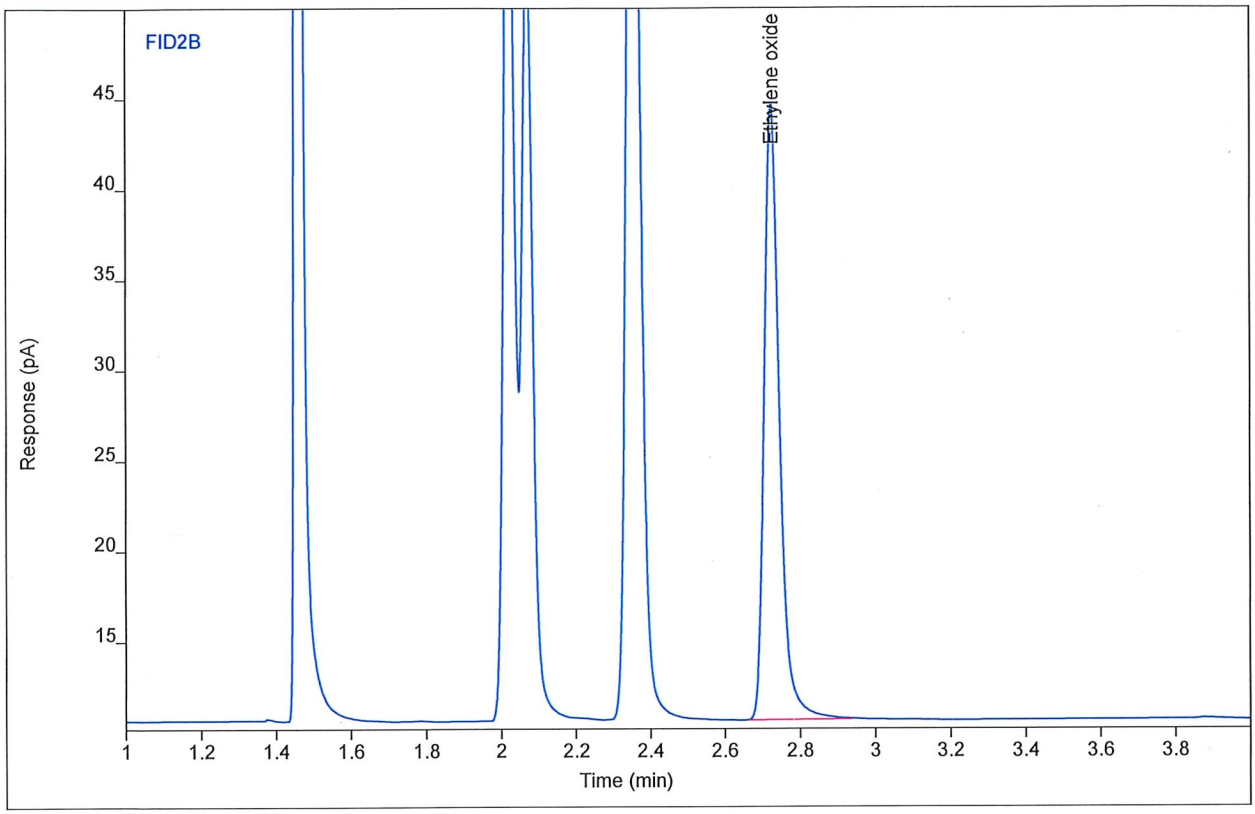
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	96.9863	34.4293	251.359	1	251.359	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC4 ENV(1=0,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0202.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 7:24 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



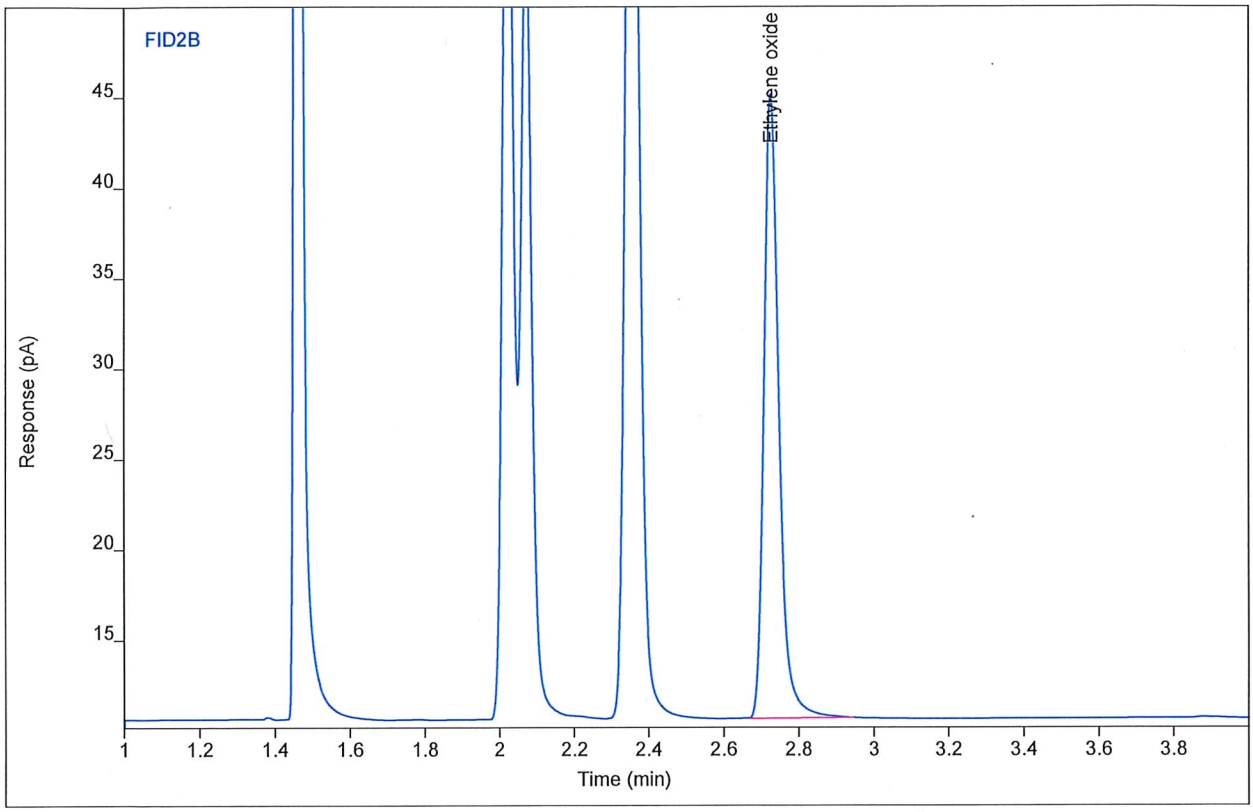
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	95.6208	34.0494	247.827	1	247.827	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP1029 #SC4 ENV(1=0,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0203.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 7:49 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



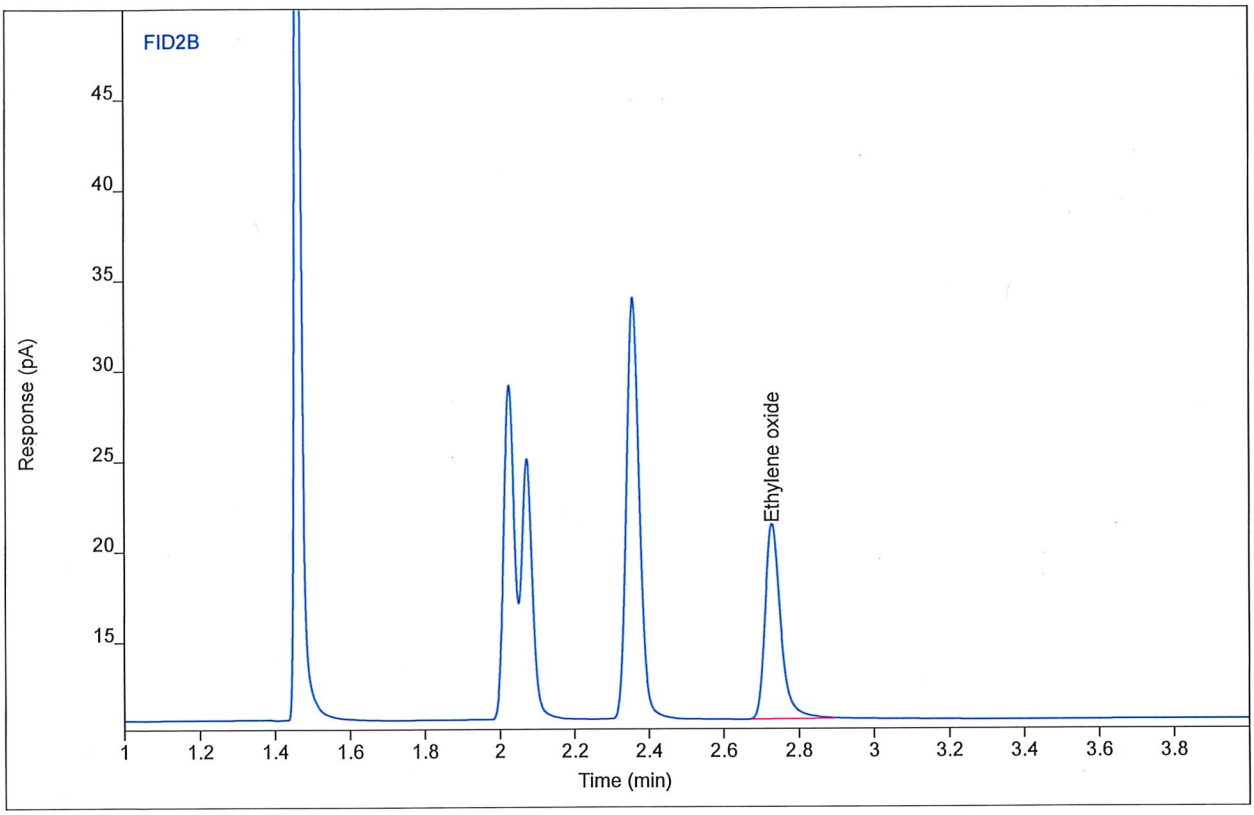
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	96.7236	34.4782	250.680	1	250.680	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0301.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 8:13 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



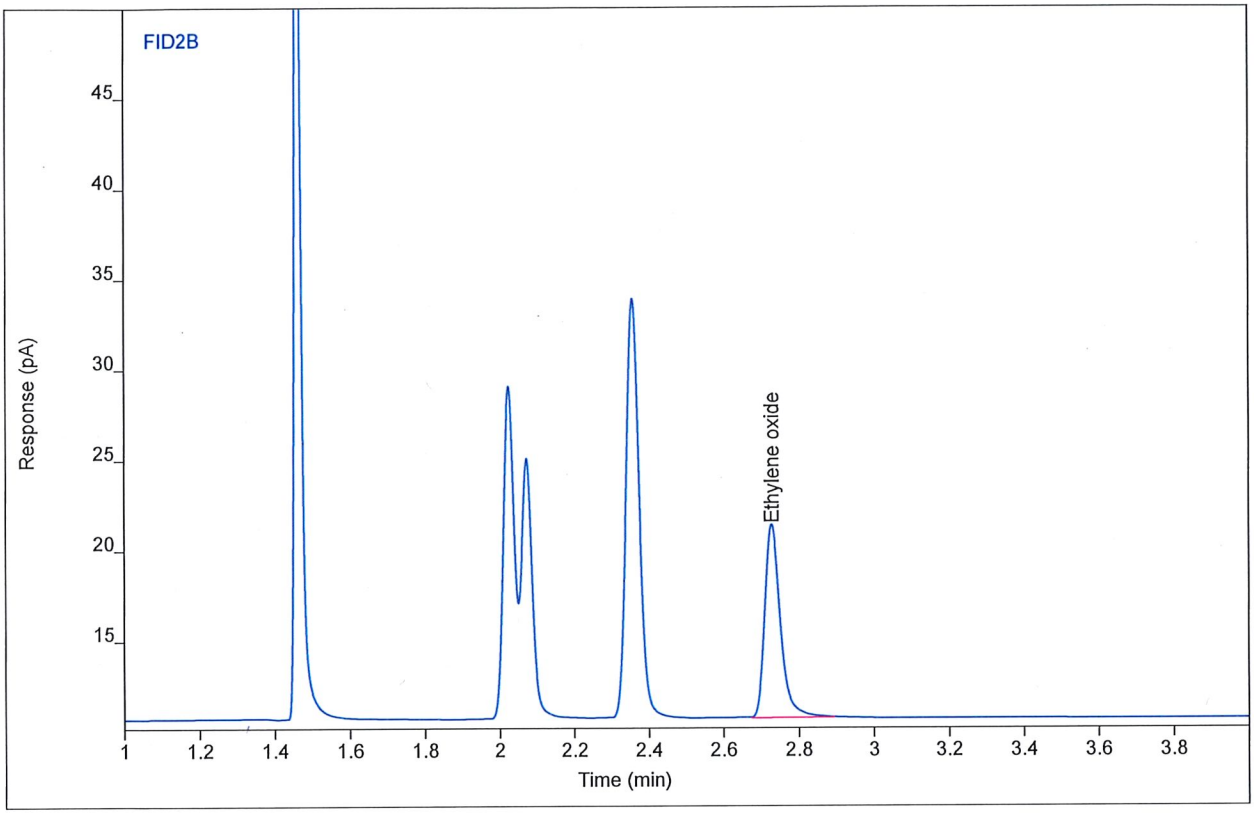
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	31.0879	10.8264	80.8931	1	80.8931	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0302.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 8:38 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



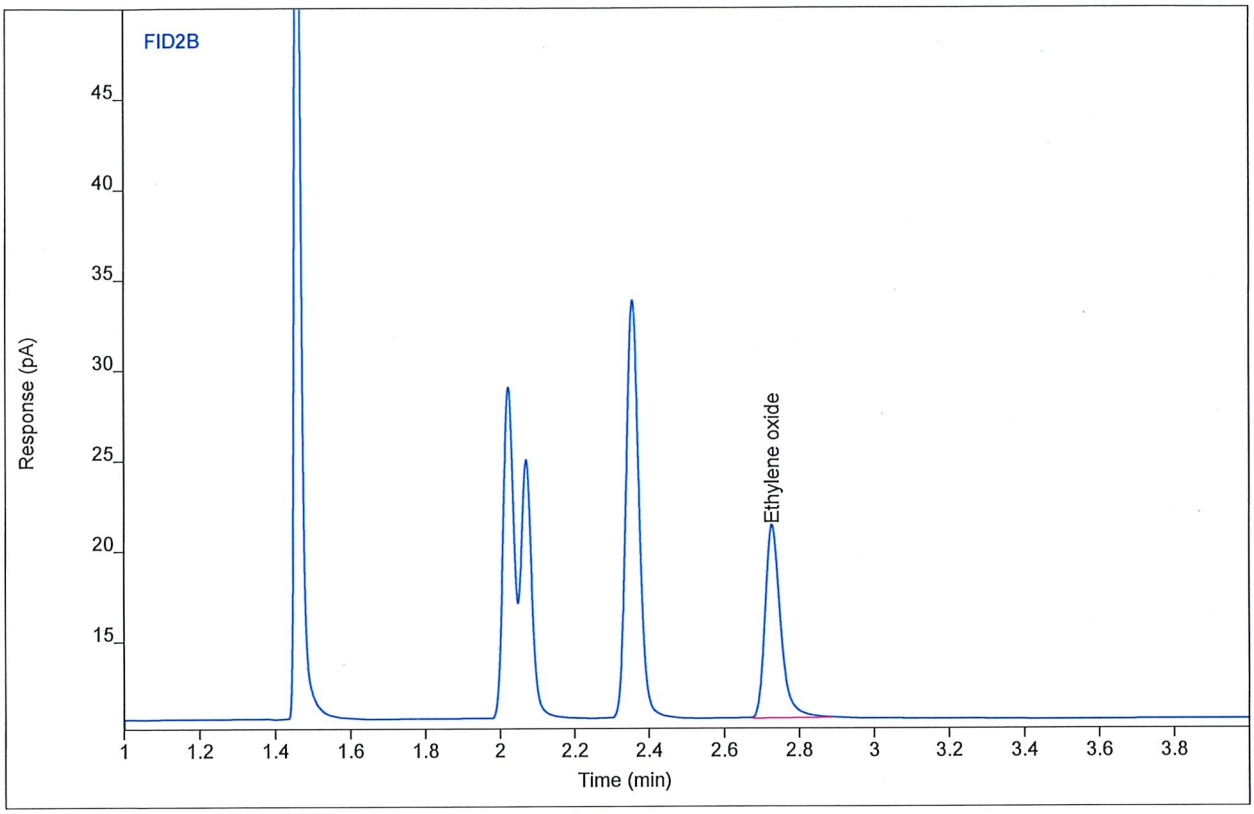
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	30.7244	10.7262	79.9529	1	79.9529	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0303.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 9:03 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



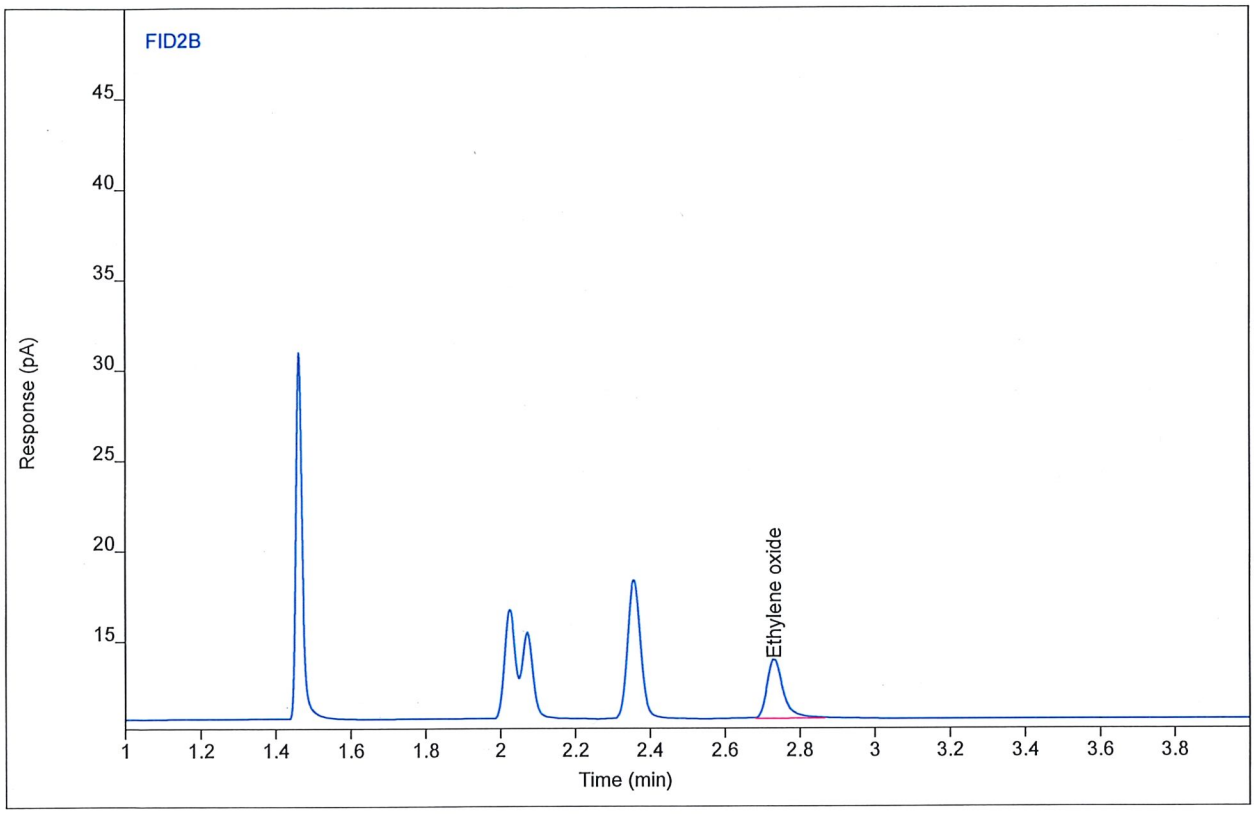
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	30.7665	10.7125	80.0616	1	80.0616	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC2 ENV(1=636,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0401.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 9:27 AM
File Modified	2/14/2019 12:43 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



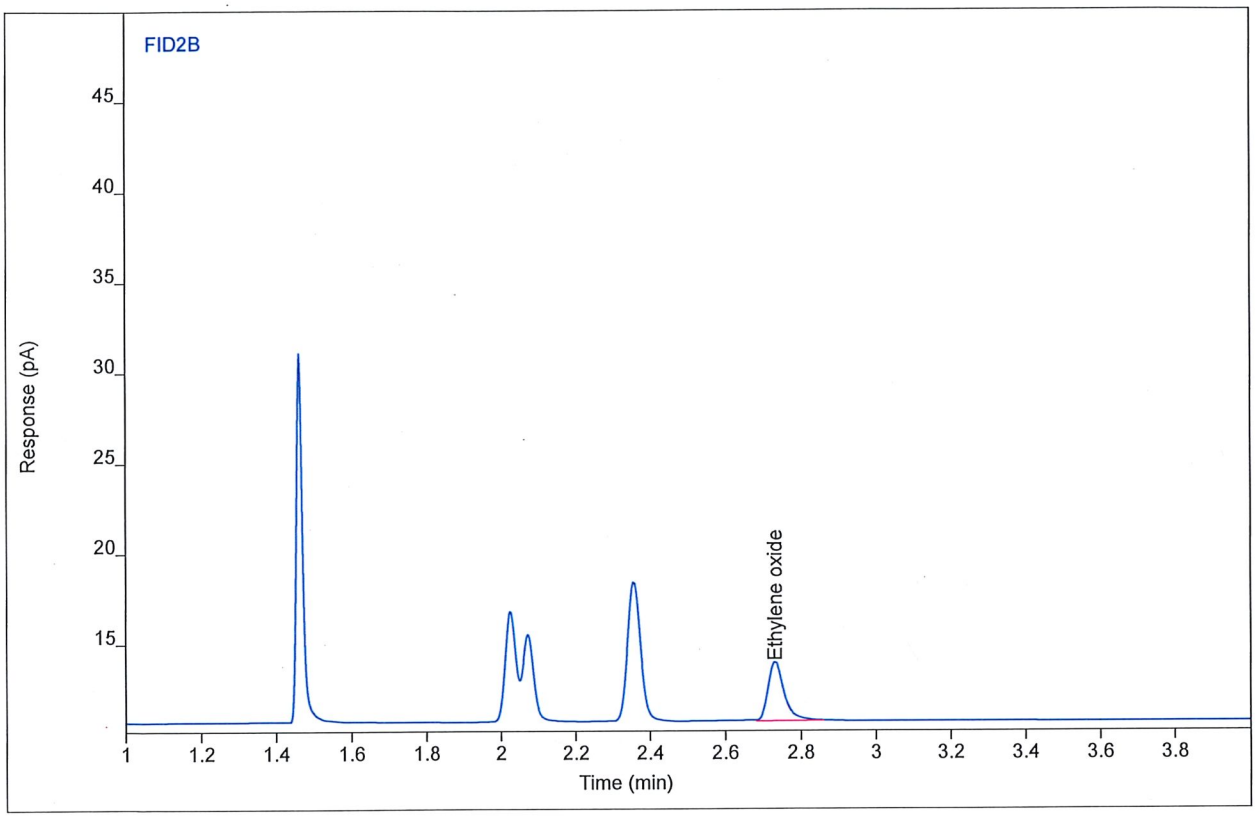
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.68032	3.28394	25.5158	1	25.5158	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC2 ENV(1=636,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0402.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 9:52 AM
File Modified	2/14/2019 12:44 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



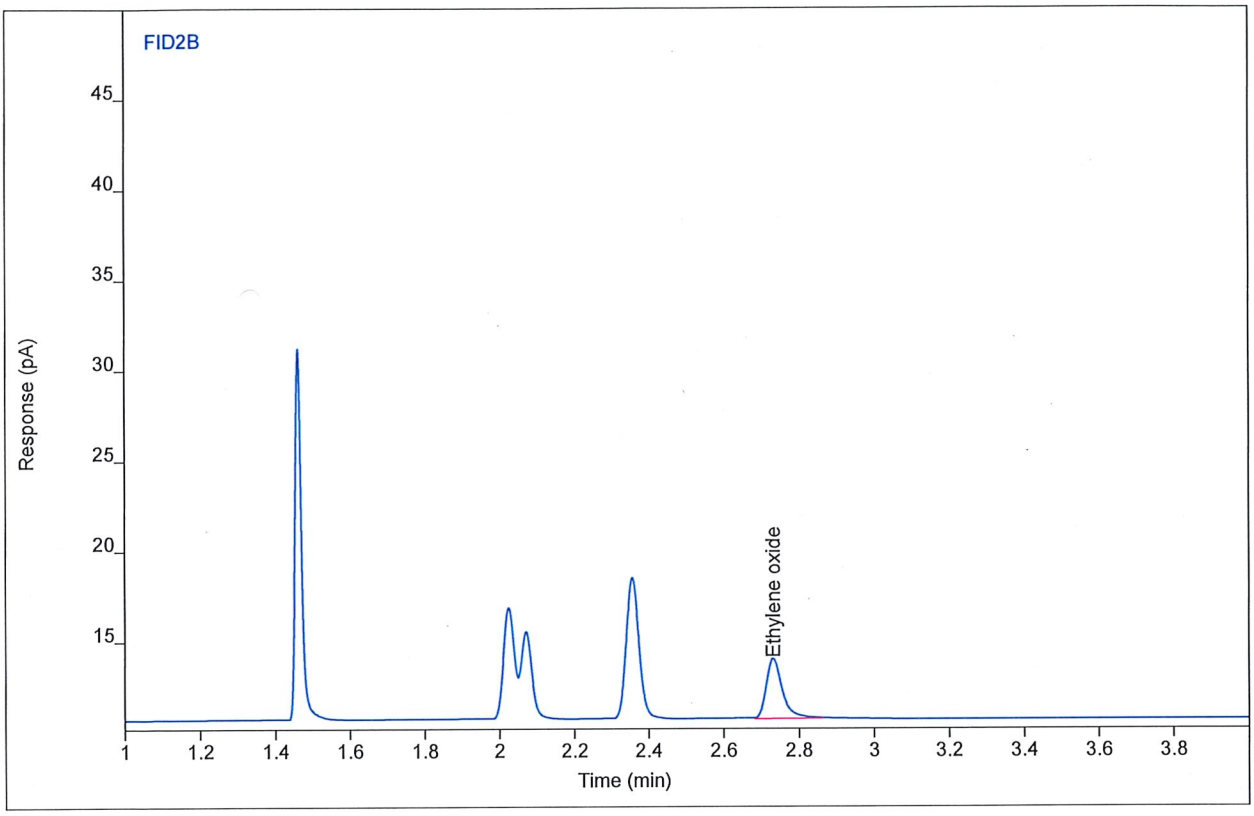
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.74881	3.30236	25.6930	1	25.6930	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC2 ENV(1=636,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0403.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 10:16 AM
File Modified	2/14/2019 12:44 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



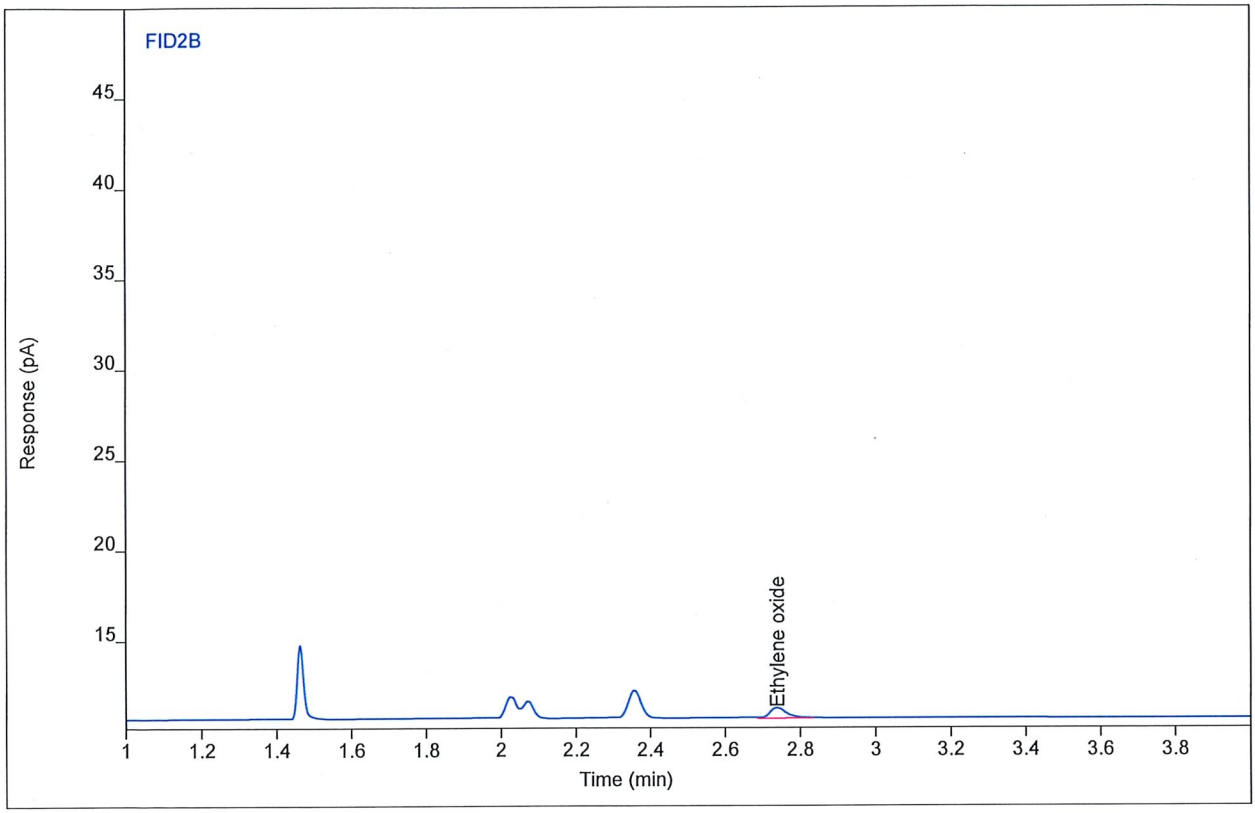
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	9.89309	3.35093	26.0662	1	26.0662	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC1 ENV(1=3462.65,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0501.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 10:41 AM
File Modified	2/14/2019 12:44 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



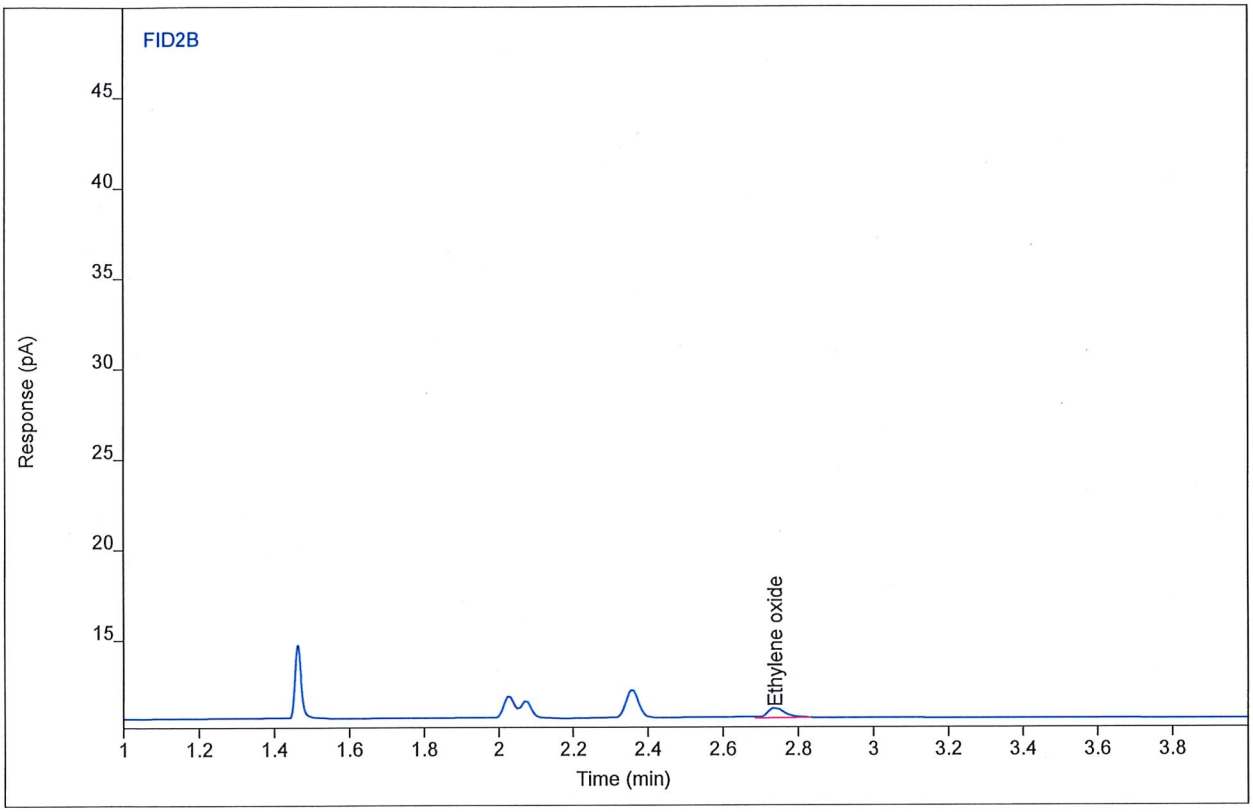
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.78751	0.58006	5.09649	1	5.09649	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC1 ENV(1=3462.65,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0502.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 11:06 AM
File Modified	2/14/2019 12:44 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



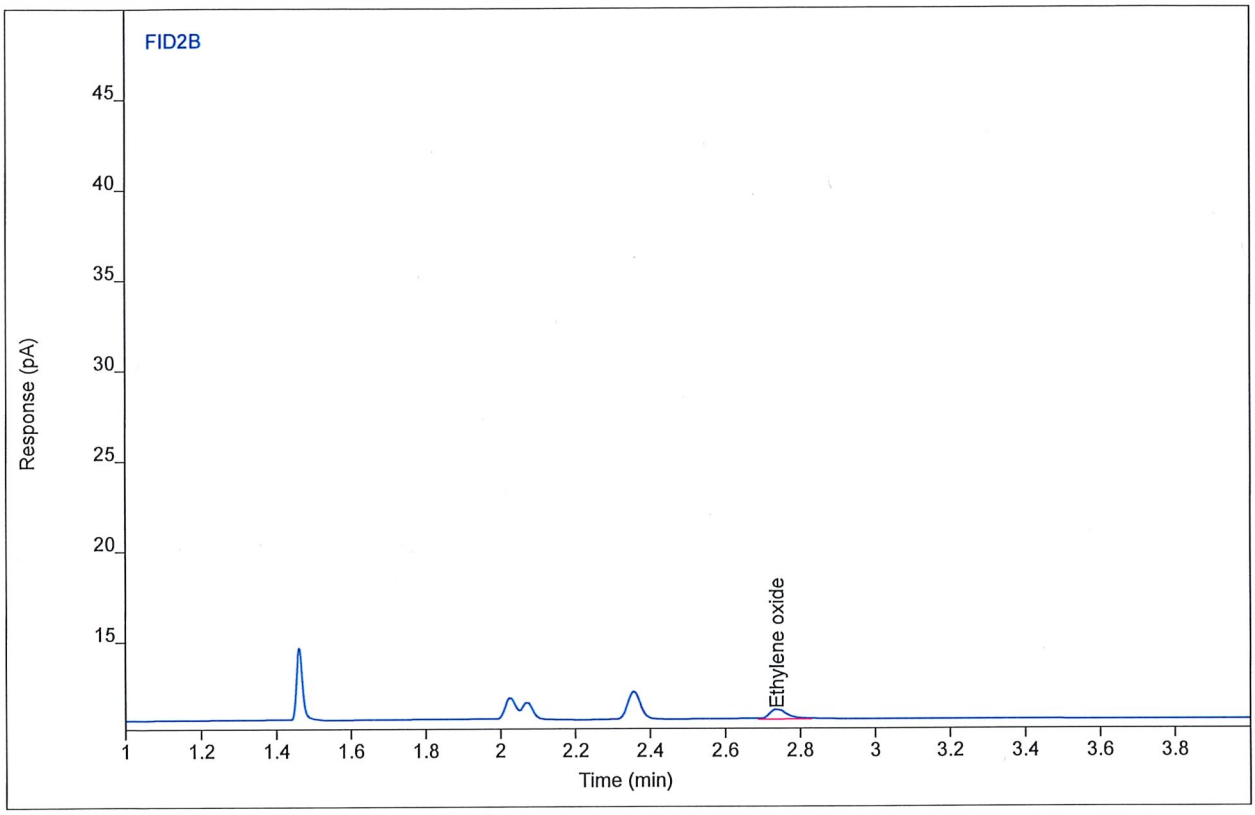
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.80940	0.58006	5.15530	1	5.15530	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP1029 #SC1 ENV(1=3462.65,6=100)
Sequence Name	BETTYP1042 ver.3
Inj Data File	025B0503.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/14/2019 11:30 AM
File Modified	2/14/2019 12:44 PM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/14/2019 12:53 PM



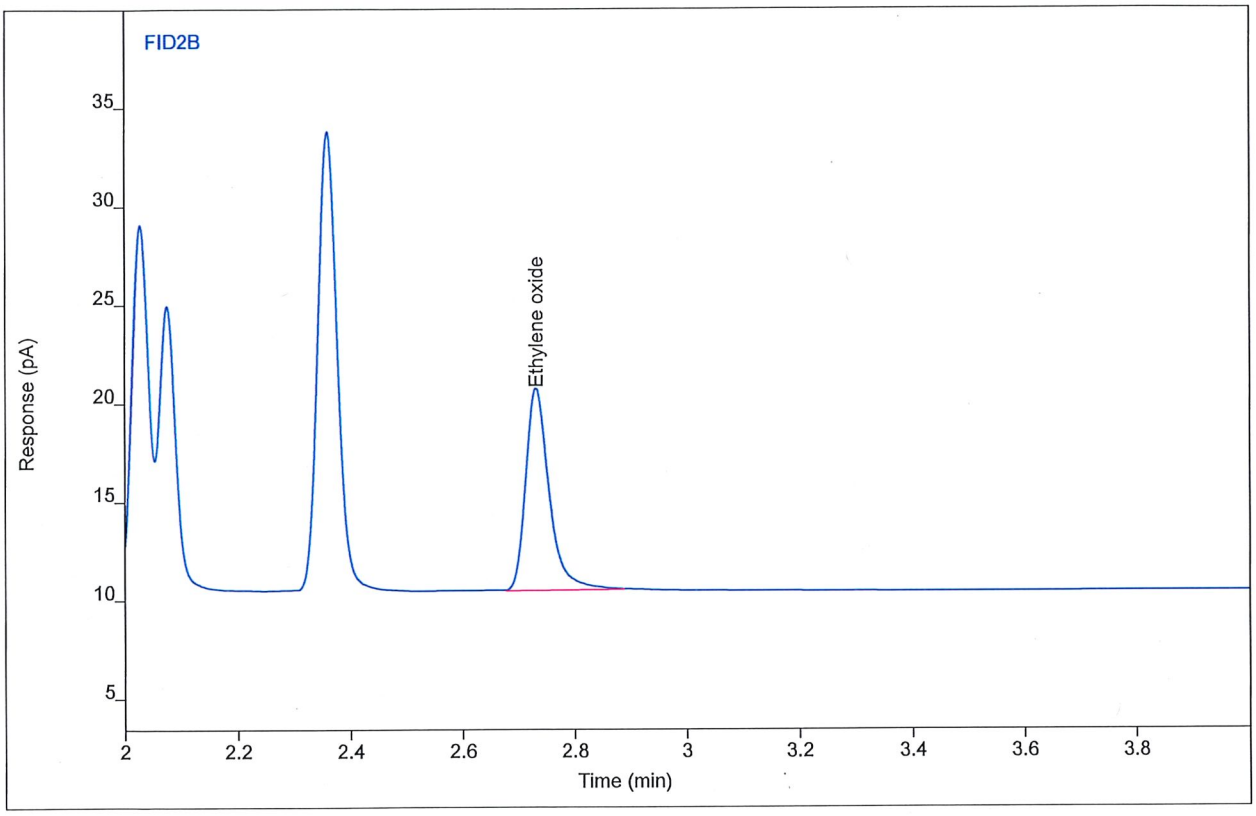
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.74	1.77830	0.56343	5.07025	1	5.07025	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B0902.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 5:21 AM
File Modified	2/15/2019 1:42 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



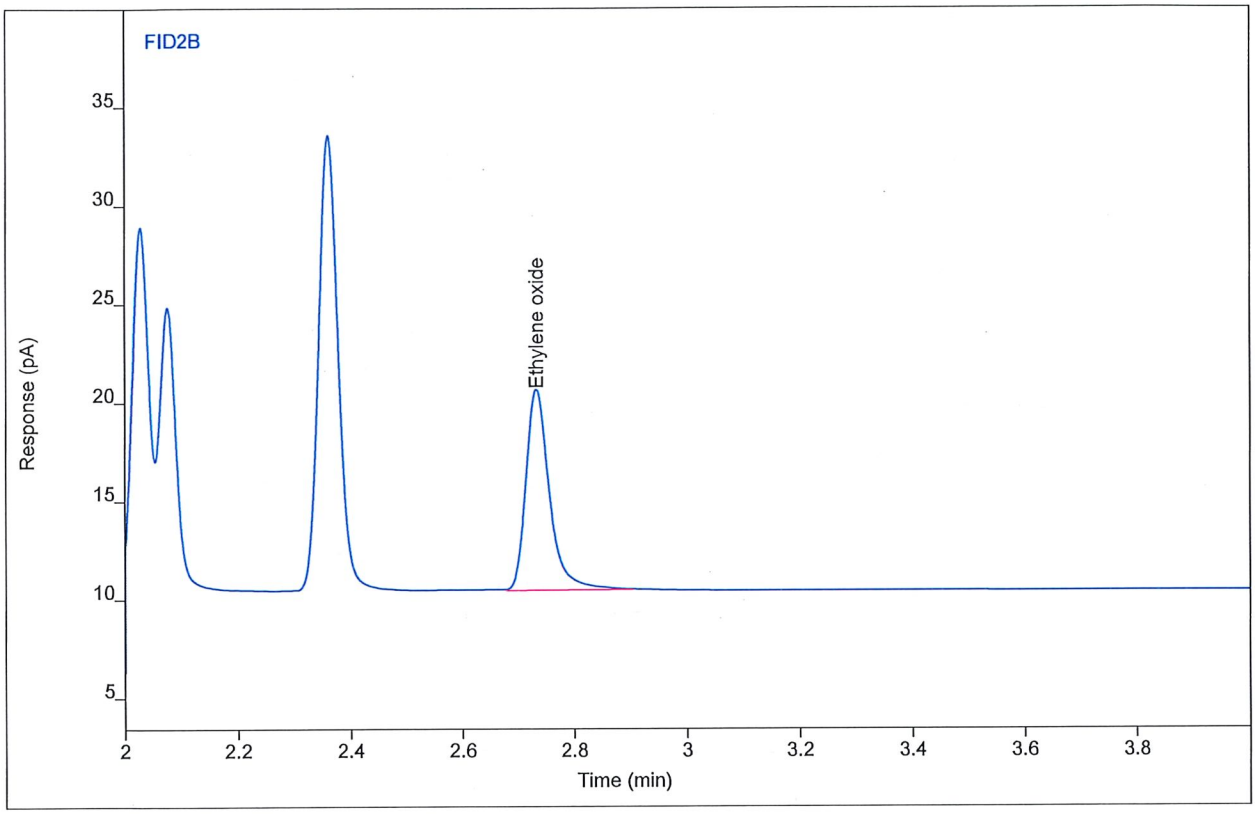
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	29.9468	10.2821	77.9412	1	77.9412	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B0903.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 5:45 AM
File Modified	2/15/2019 1:42 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



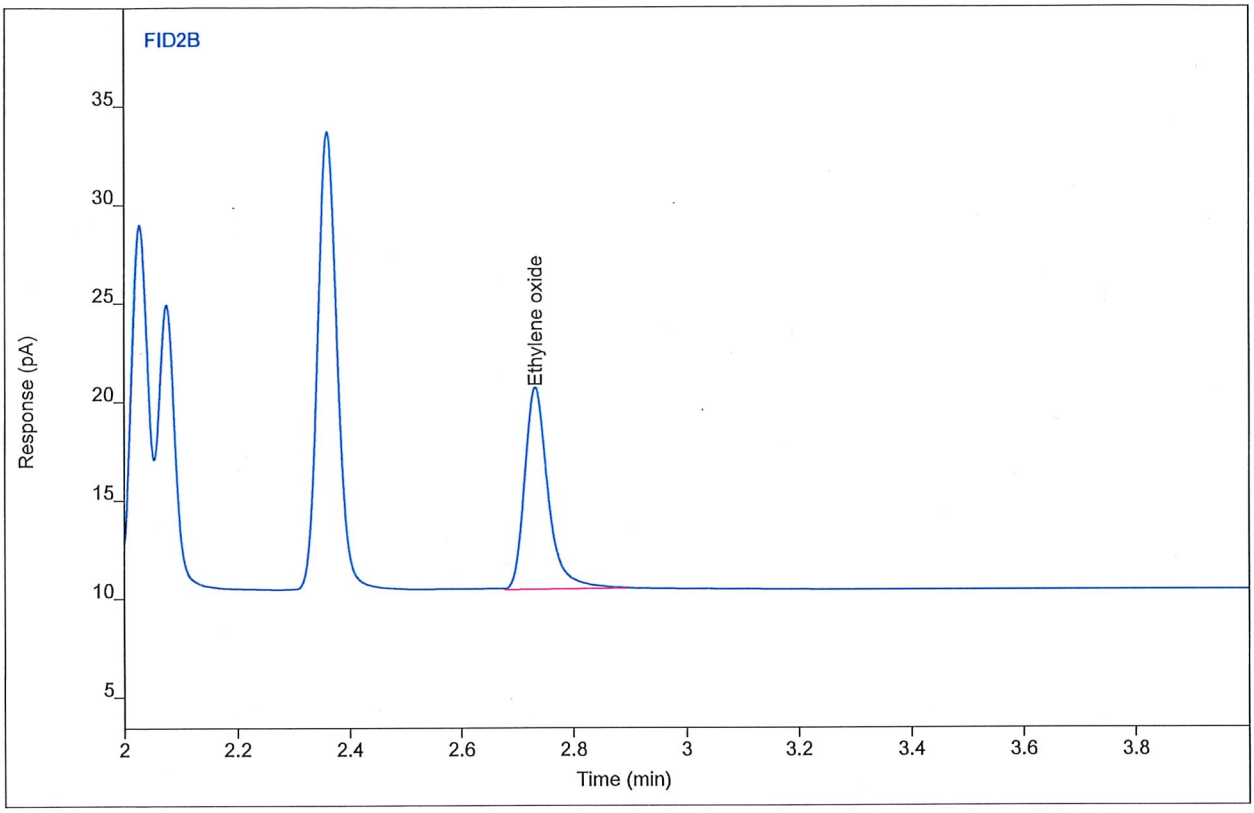
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	29.8911	10.2110	77.7971	1	77.7971	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B0904.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 6:10 AM
File Modified	2/15/2019 1:42 PM
Instrument	Betty
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	4 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



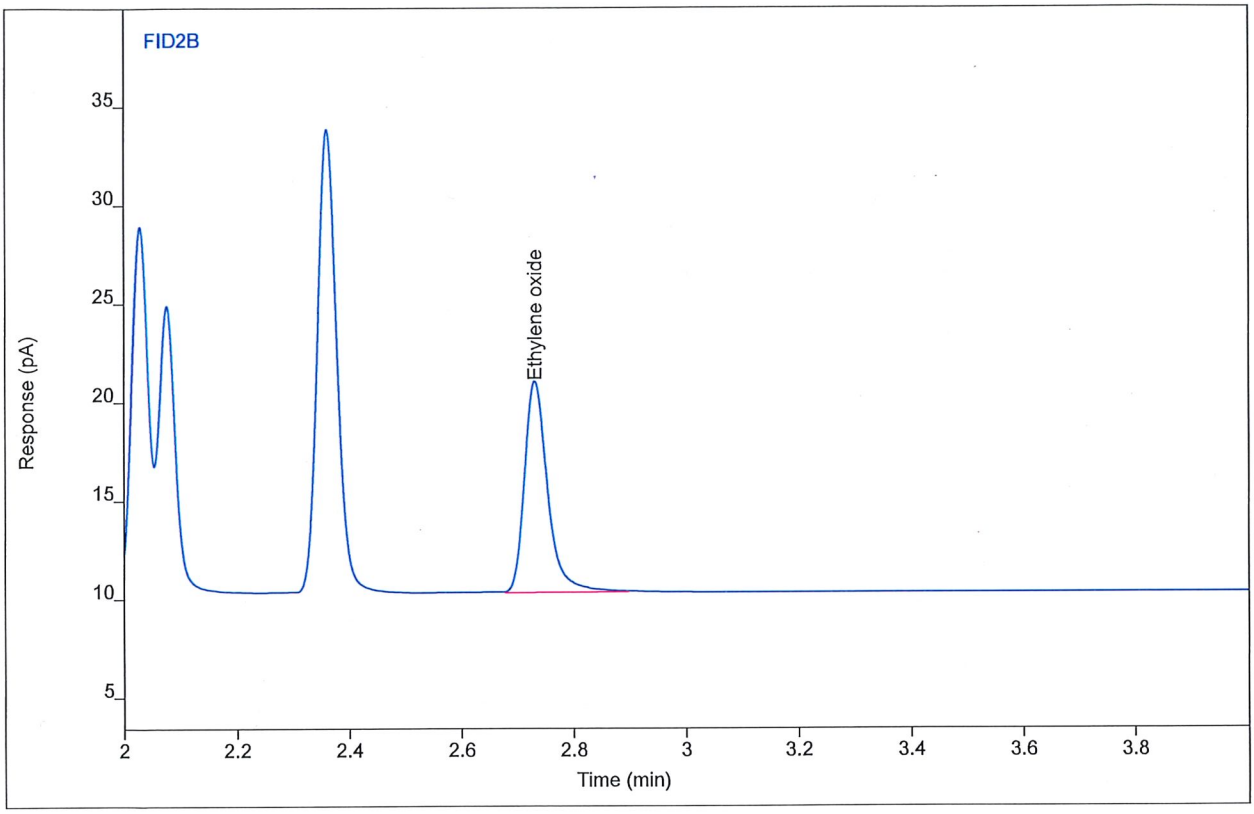
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	29.8343	10.2541	77.6502	1	77.6502	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B1501.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 11:41 AM
File Modified	2/15/2019 1:44 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



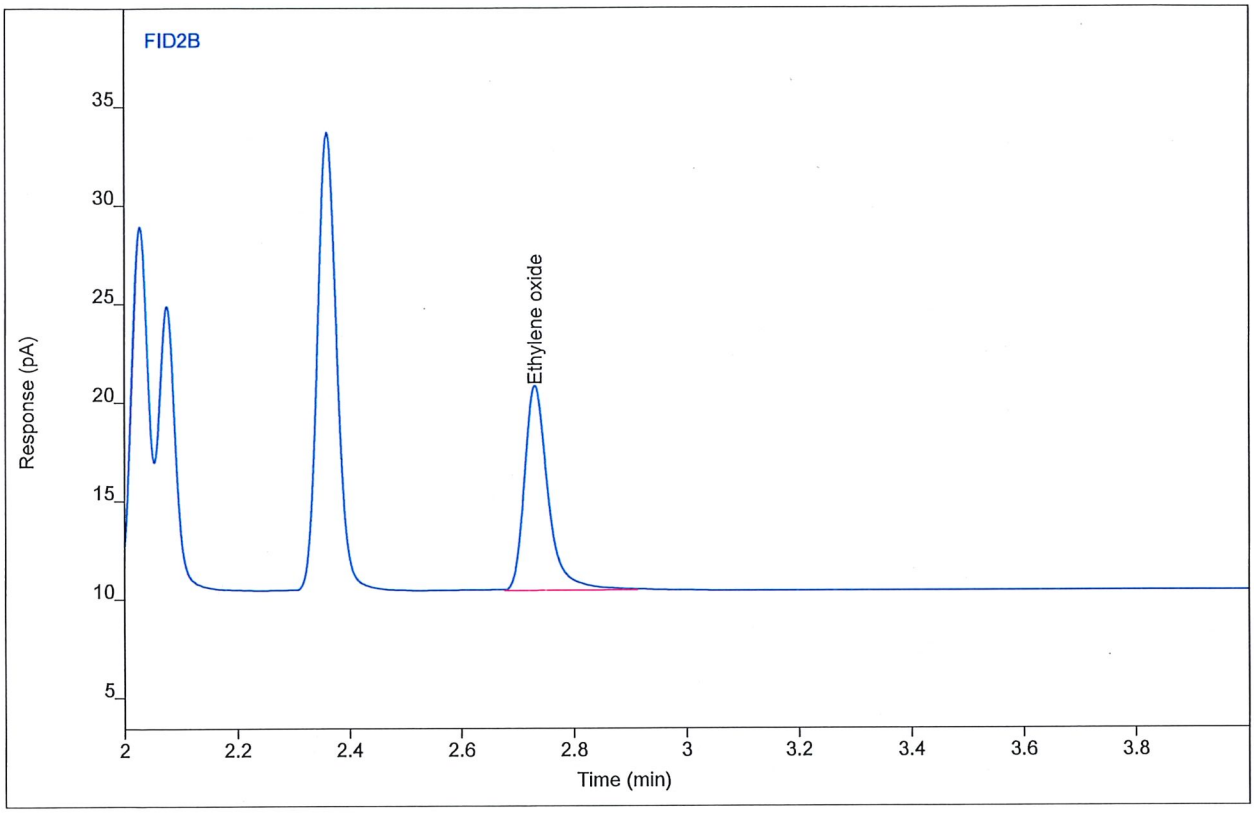
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	30.9416	10.7390	80.5145	1	80.5145	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B1502.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 12:06 PM
File Modified	2/15/2019 1:44 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



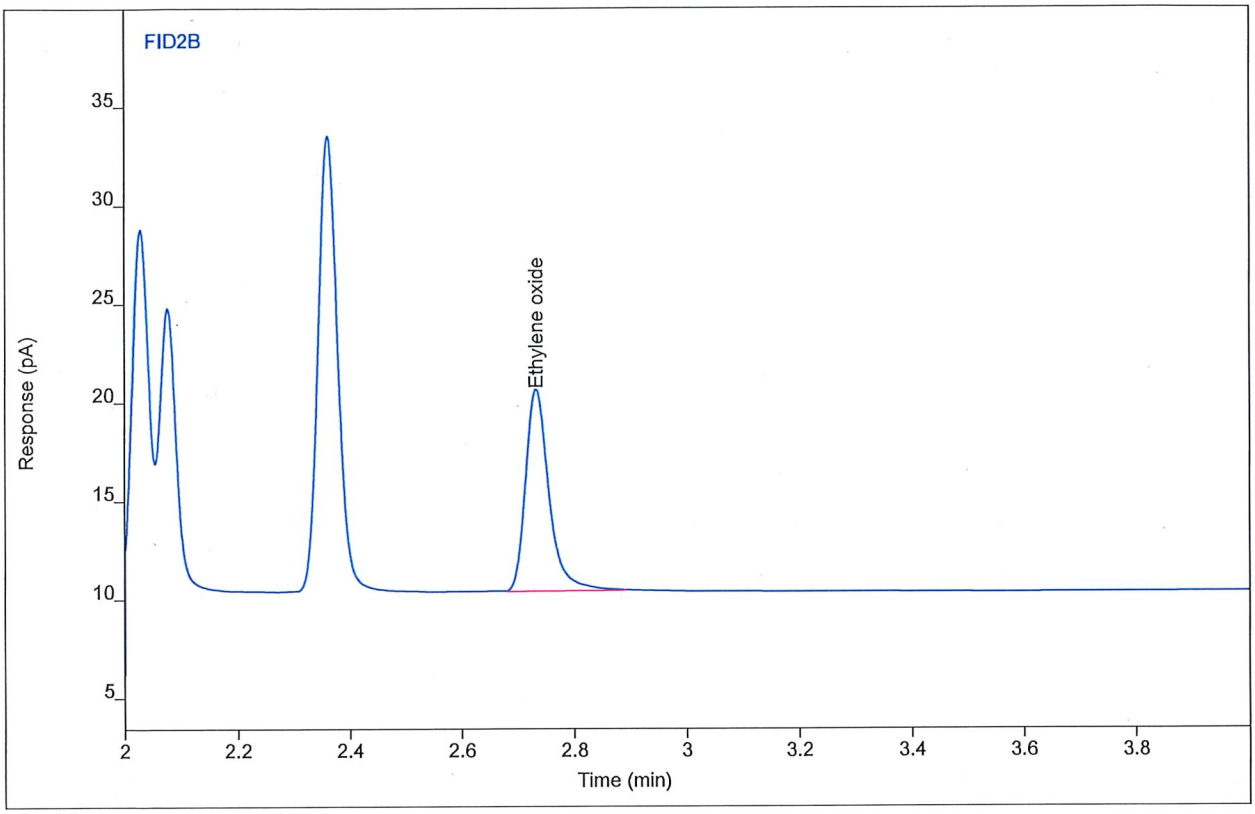
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	30.3319	10.4041	78.9374	1	78.9374	ppm

Chromatogram Report

Sample Name	BettyP1029 #SC3 ENV(1=636,6=400)
Sequence Name	BETTYP1042A ver.2
Inj Data File	025B1503.D
File Location	GC/2019/Betty/Quarter 1
Injection Date	2/15/2019 12:31 PM
File Modified	2/15/2019 1:44 PM
Instrument	Betty
Operator	Jennie Parrish

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP1042_EO.M
Method Modified	2/14/2019 11:47 AM
Printed	2/18/2019 7:25 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	2.73	29.6268	10.2687	77.1134	1	77.1134	ppm

dified on: 5/5/2014 at 7:51:02 AM

6890 GC METHOD

OVEN
- Initial temp: 40 C (On)
- Initial time: 6.00 min
- Ramps:

#	Rate	Final temp	Final time
1	30.00	220	2.00
2	0 (Off)		

- Post temp: 40 C
- Post time: 0.00 min
- Run time: 14.00 min
- Maximum temp: 250 C
- Equilibration time: 0.50 min

CRYO (N2)
- Cryo: Off
- Cryo fault: On
- Cryo timeout: 40.00 min (On)
- Quick cryo cool: Off
- Ambient temp: 30 C

FRONT INLET (SPLIT/SPLITLESS)
- Mode: Splitless
- Initial temp: 200 C (On)
- Pressure: 60.0 psi (On)
- Purge flow: 0.0 mL/min
- Purge time: 0.00 min
- Total flow: 12.3 mL/min
- Gas saver: Off
- Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)
- Mode: Split
- Initial temp: 200 C (On)
- Pressure: 11.6 psi (On)
- Split ratio: 5:1
- Split flow: 12.3 mL/min
- Total flow: 17.6 mL/min
- Gas saver: Off
- Gas type: Helium

COLUMN 1
- Packed Column
- Model Number: 19808
- Description: Rt-ShinCarbon 2m x 1mm I
- Max temperature: 250 C
- Mode: constant pressure
- Pressure: 60.0 psi
- Inlet: Front Inlet
- Outlet: Front Detector
- Outlet pressure: ambient

COLUMN 2
- Capillary Column
- Model Number: 10198
- Description: Rtx-1 30m x 0.32mm x 4um
- Max temperature: 250 C
- Nominal length: 30.0 m
- Nominal diameter: 320.00 um
- Nominal film thickness: 4.00 um
- Mode: constant flow
- Initial flow: 2.5 mL/min
- Nominal init pressure: 11.6 psi
- Average velocity: 39 cm/sec
- Inlet: Back Inlet
- Outlet: (other)
- Outlet pressure: ambient

FRONT DETECTOR (TCD)
- Temperature: 275 C (On)
- Reference flow: 20.0 mL/min (On)
- Mode: Constant makeup flow
- Makeup flow: 10.0 mL/min (On)
- Makeup Gas Type: Helium
- Filament: On
- Negative polarity: On

BACK DETECTOR (FID)
- Temperature: 250 C (On)
- Hydrogen flow: 60.0 mL/min (On)
- Air flow: 450.0 mL/min (On)
- Mode: Constant makeup flow
- Makeup flow: 40.0 mL/min (On)
- Makeup Gas Type: Nitrogen
- Flame: On
- Electrometer: On
- Lit offset: 2.0

SIGNAL 1
- Data rate: 20 Hz
- Type: front detector
- Save Data: On

SIGNAL 2
- Data rate: 20 Hz
- Type: back detector
- Save Data: On

THERMAL AUX 1
- Use: Valve Box Heater
- Initial temp: 130 C (On)

VALVES
- Valve 1 Gas Sampling
  - Loop Volume: 0.250 mL

POST RUN
- Post Time: 0.00 min

dified on: 5/5/2014 at 7:51:02 AM
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet
Valve 2 Gas Sampling
Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet

TIME TABLE

Time(min)	Parameter & Setpoint	
3.00	Front Detector Polarity:	Off

dified on: 2/17/2014 at 5:52:35 PM

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6890 GC METHOD

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OVEN
Initial temp: 40 C (On)
Initial time: 3.00 min
Ramps:

#	Rate	Final temp	Final time
1	0 (Off)		

Post temp: 40 C
Post time: 0.00 min
Run time: 3.00 min

Maximum temp: 250 C
Equilibration time: 0.50 min

CRYO (N2)
Cryo: Off
Cryo fault: On
Cryo timeout: 40.00 min (On)
Quick cryo cool: Off
Ambient temp: 30 C

FRONT INLET (SPLIT/SPLITLESS)
Mode: Splitless
Initial temp: 200 C (On)
Pressure: 60.0 psi (On)
Purge flow: 0.0 mL/min
Purge time: 0.00 min
Total flow: 12.3 mL/min
Gas saver: Off
Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)
Mode: Split
Initial temp: 200 C (On)
Pressure: 11.7 psi (On)
Split ratio: 5:1
Split flow: 12.3 mL/min
Total flow: 17.6 mL/min
Gas saver: Off
Gas type: Helium

COLUMN 1
Packed Column
Model Number: 19808
Description: Rt-ShinCarbon 2m x 1mm I
Max temperature: 250 C
Mode: constant pressure
Pressure: 60.0 psi
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2
Capillary Column
Model Number: 10198
Description: Rtx-1 30m x 0.32mm x 4um
Max temperature: 250 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.5 mL/min
Nominal init pressure: 11.7 psi
Average velocity: 39 cm/sec
Inlet: Back Inlet
Outlet: (other)
Outlet pressure: ambient

FRONT DETECTOR (TCD)
Temperature: 275 C (On)
Reference flow: 20.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 10.0 mL/min (On)
Makeup Gas Type: Helium
Filament: On
Negative polarity: On

BACK DETECTOR (FID)
Temperature: 250 C (On)
Hydrogen flow: 60.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 40.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1
Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2
Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1
Use: Valve Box Heater
Initial temp: 130 C (On)

VALVES
Valve 1 Gas Sampling
Loop Volume: 0.250 mL

POST RUN
Post Time: 0.00 min

dified on: 2/17/2014 at 5:52:35 PM
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet
Valve 2 Gas Sampling
Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet

TIME TABLE
Time(min) Parameter & Setpoint

Calibration Table

Calib. Data Modified : Friday, February 1, 2019 9:36:29 AM

Rel. Reference Window : 0.000 %
Abs. Reference Window : 0.100 min
Rel. Non-ref. Window : 0.000 %
Abs. Non-ref. Window : 0.050 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

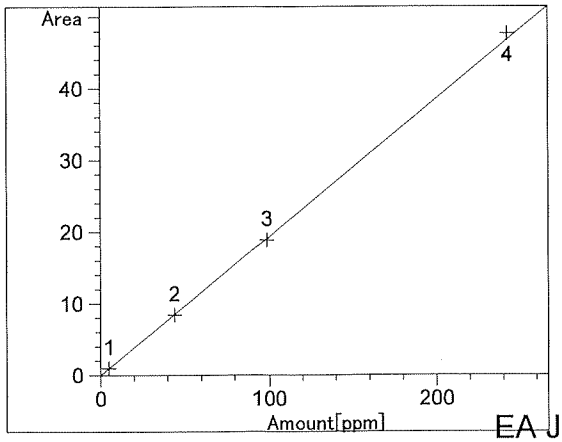
Signal 1: FID1 A,
Signal 2: FID2 B,

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
3.143	1	1	5.13000	9.75588e-1	5.25837			Ethylene Oxide
		2	44.10000	8.39759	5.25151			
		3	98.50000	18.81007	5.23656			
		4	242.60000	47.61048	5.09552			

Peak Sum Table

No Entries in table

Calibration Curves



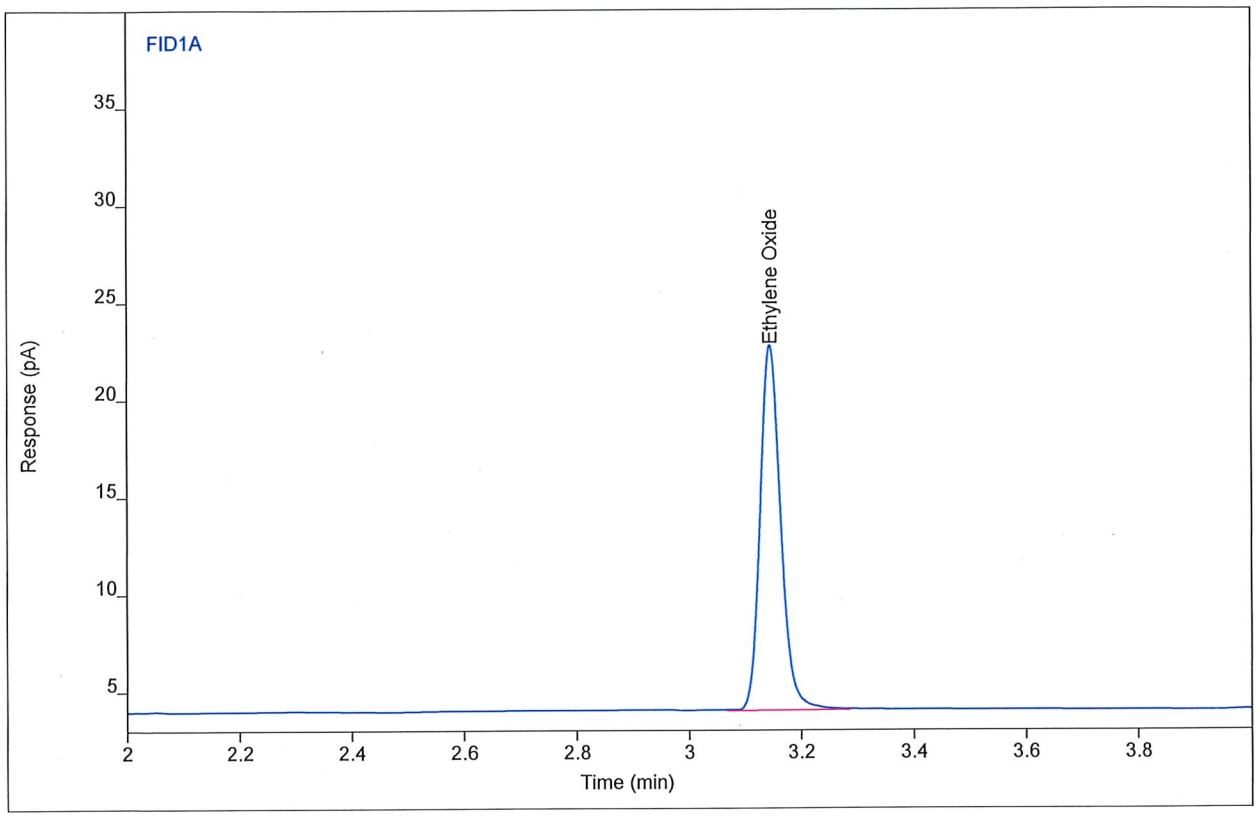
Ethylene Oxide at exp. RT: 3.143
FID1 A,
Correlation: 0.99990
Residual Std. Dev.: 0.61510
Formula: y = mx + b
m: 1.92813e-1
b: -1.48438e-2
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.013532
Level 3 : 0.002712
Level 4 : 0.000447

Chromatogram Report

Sample Name	gummop1536 #EO4 ENV(1=0,4=400)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0102.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 1:54 PM
File Modified	2/1/2019 9:48 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



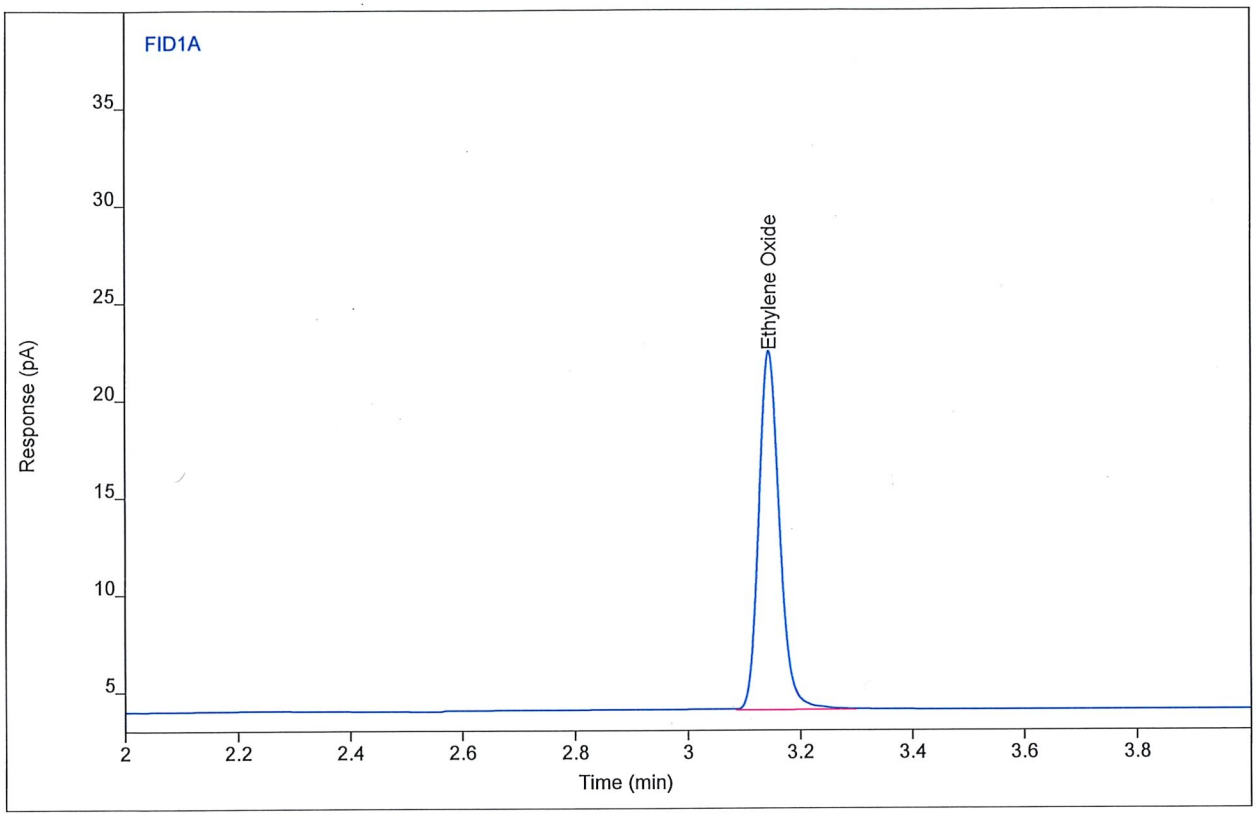
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	48.0857	17.7231	249.467	1	249.467	ppm

Chromatogram Report

Sample Name	gummop1536 #EO4 ENV(1=0,4=400)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0103.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 2:12 PM
File Modified	2/1/2019 9:48 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



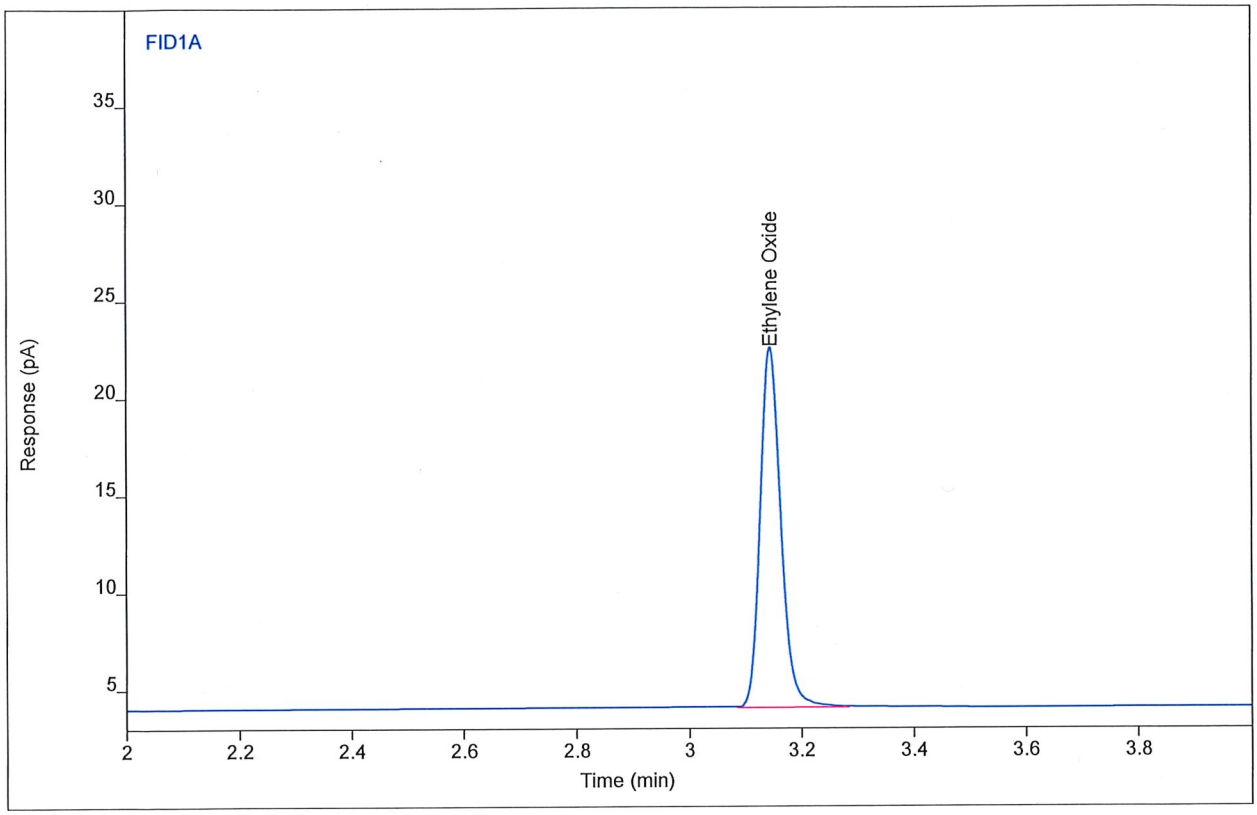
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	47.4155	17.5924	245.991	1	245.991	ppm

Chromatogram Report

Sample Name	gummop1536 #EO4 ENV(1=0,4=400)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0104.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 2:30 PM
File Modified	2/1/2019 9:48 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



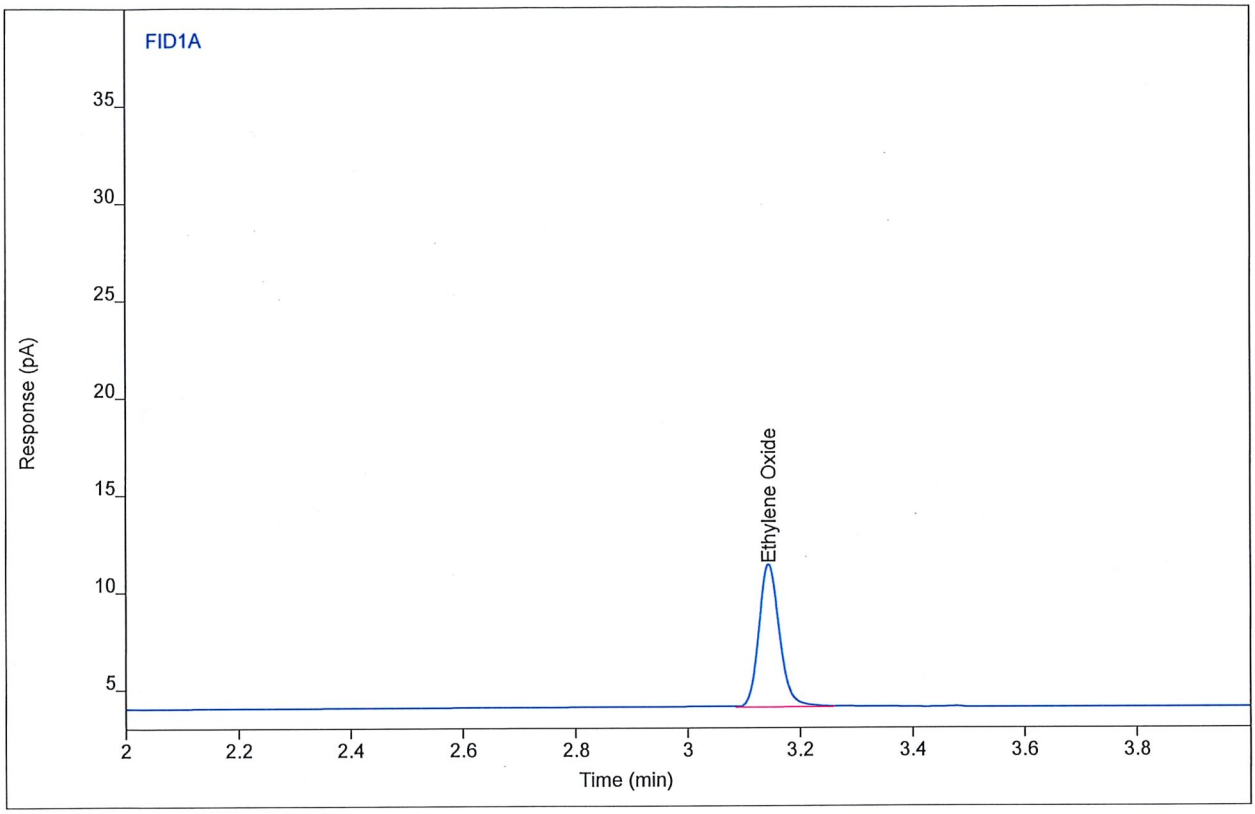
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	47.3303	17.5278	245.549	1	245.549	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0202.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 3:06 PM
File Modified	2/1/2019 9:48 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



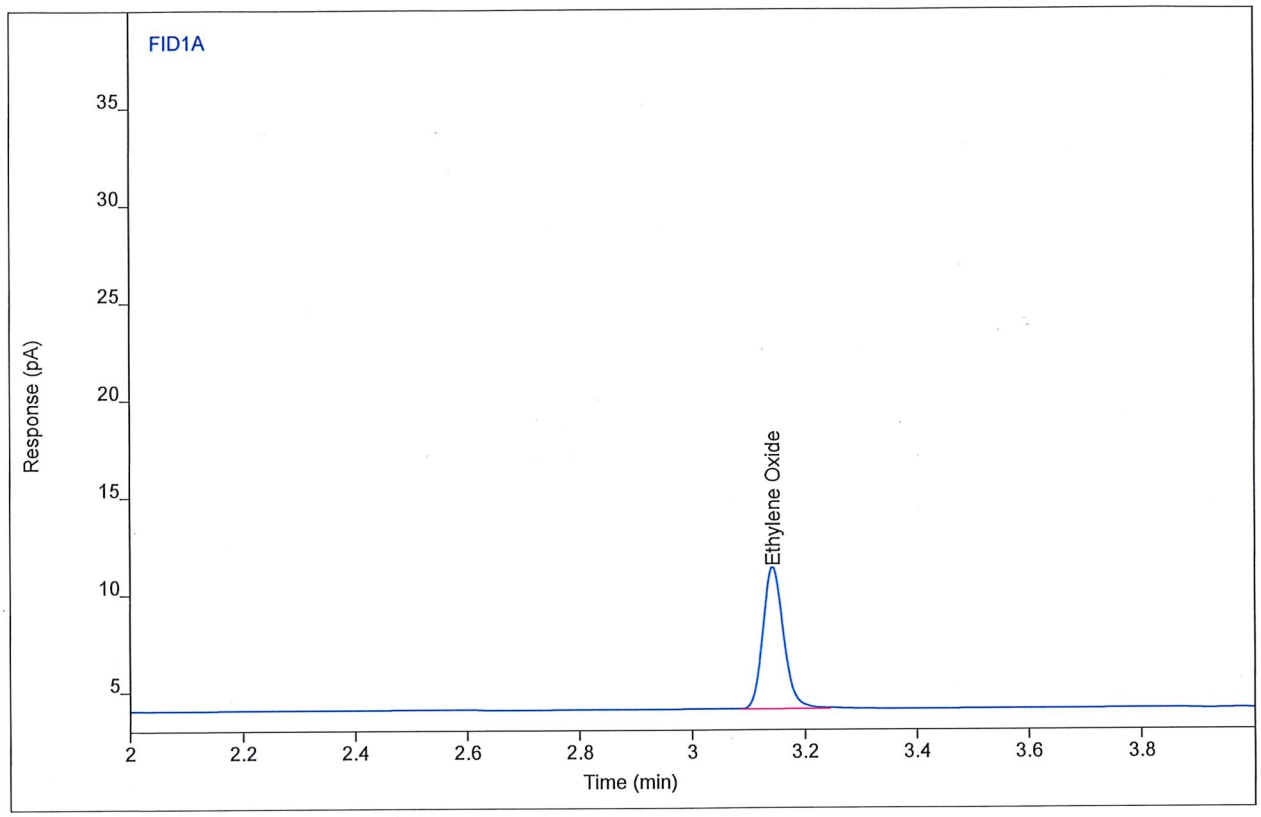
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.14	18.9348	7.01103	98.2798	1	98.2798	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0203.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 3:24 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



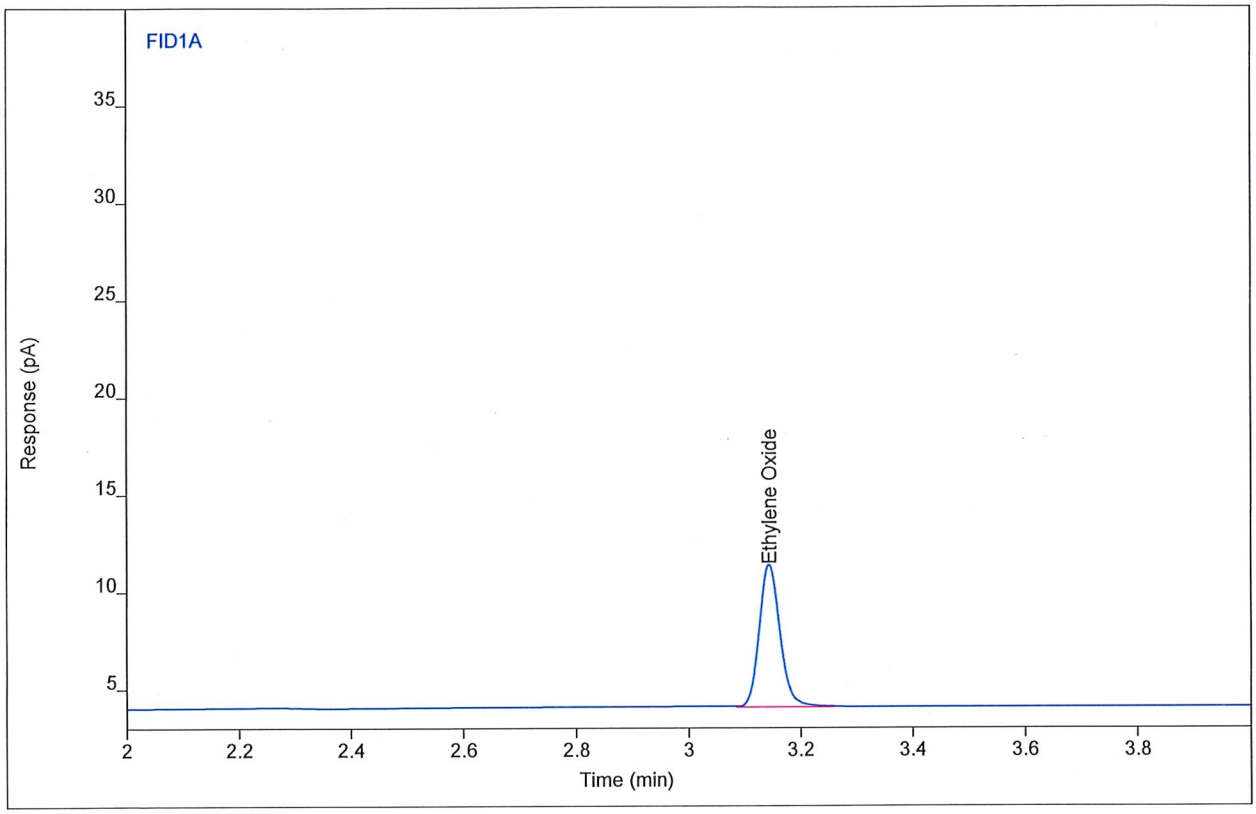
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.14	18.6583	7.00661	96.8456	1	96.8456	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0204.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 3:42 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



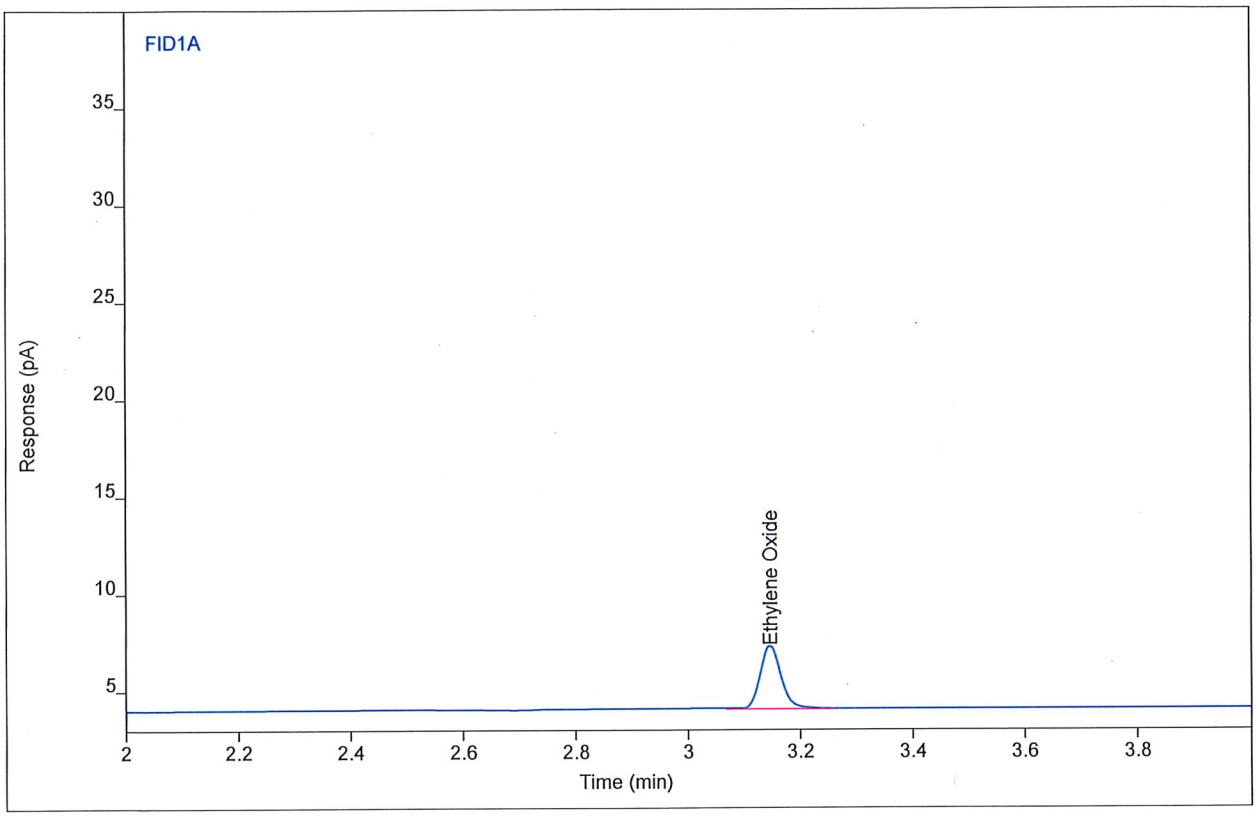
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.14	18.8371	7.00073	97.7733	1	97.7733	ppm

Chromatogram Report

Sample Name	gummop1536 #EO2 ENV(1=900,4=200)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0302.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 4:18 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



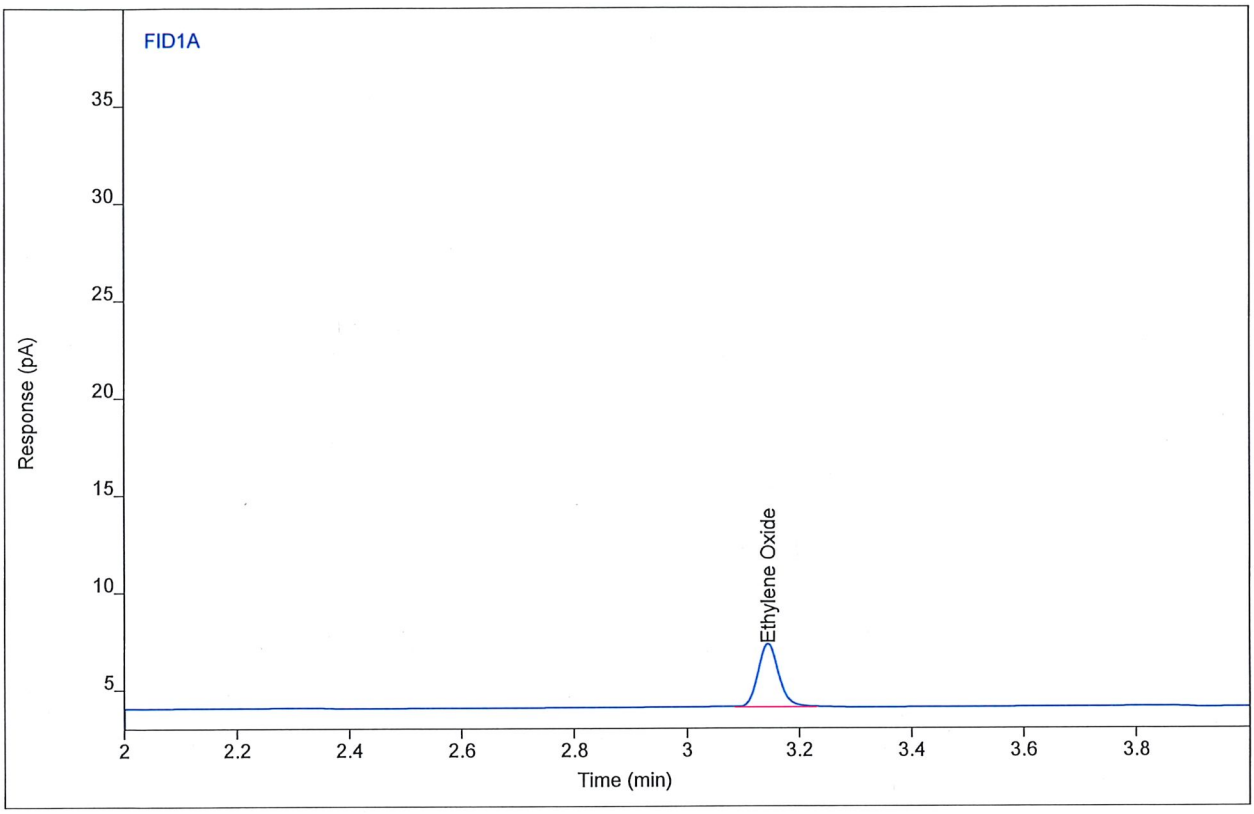
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	8.43922	3.03728	43.8459	1	43.8459	ppm

Chromatogram Report

Sample Name	gummop1536 #EO2 ENV(1=900,4=200)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0303.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 4:36 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



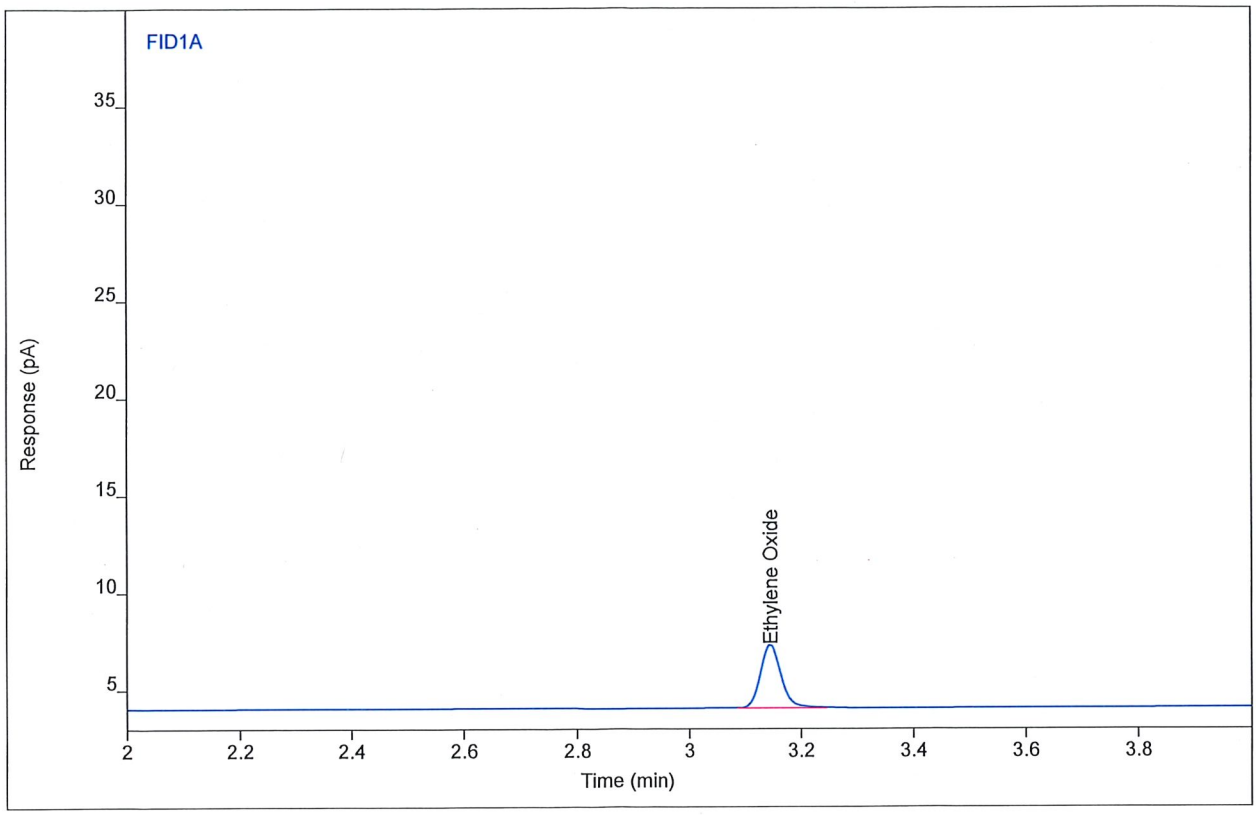
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.14	8.32955	3.08623	43.2771	1	43.2771	ppm

Chromatogram Report

Sample Name	gummop1536 #EO2 ENV(1=900,4=200)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0304.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 4:54 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



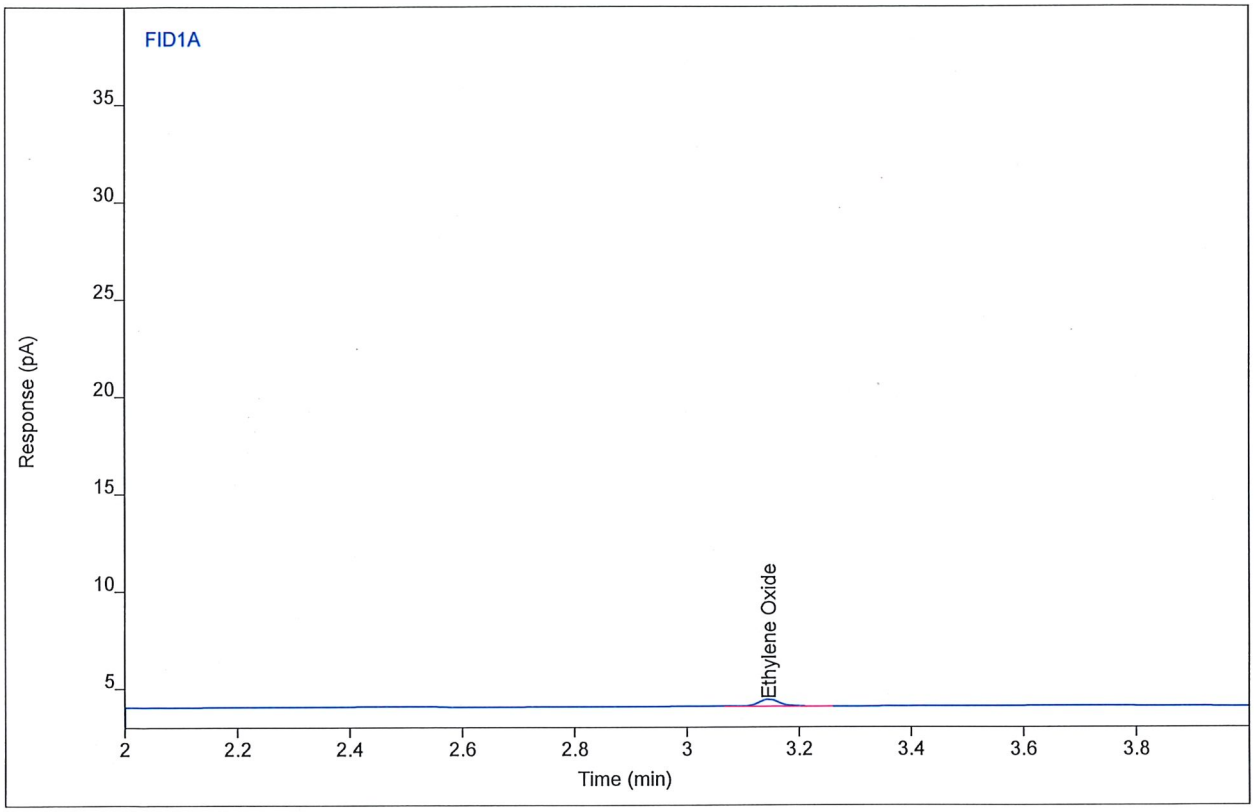
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	8.42400	3.09429	43.7669	1	43.7669	ppm

Chromatogram Report

Sample Name	gummop1536 #EO1 ENV(1=3700,4=80)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0402.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 5:30 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 10
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



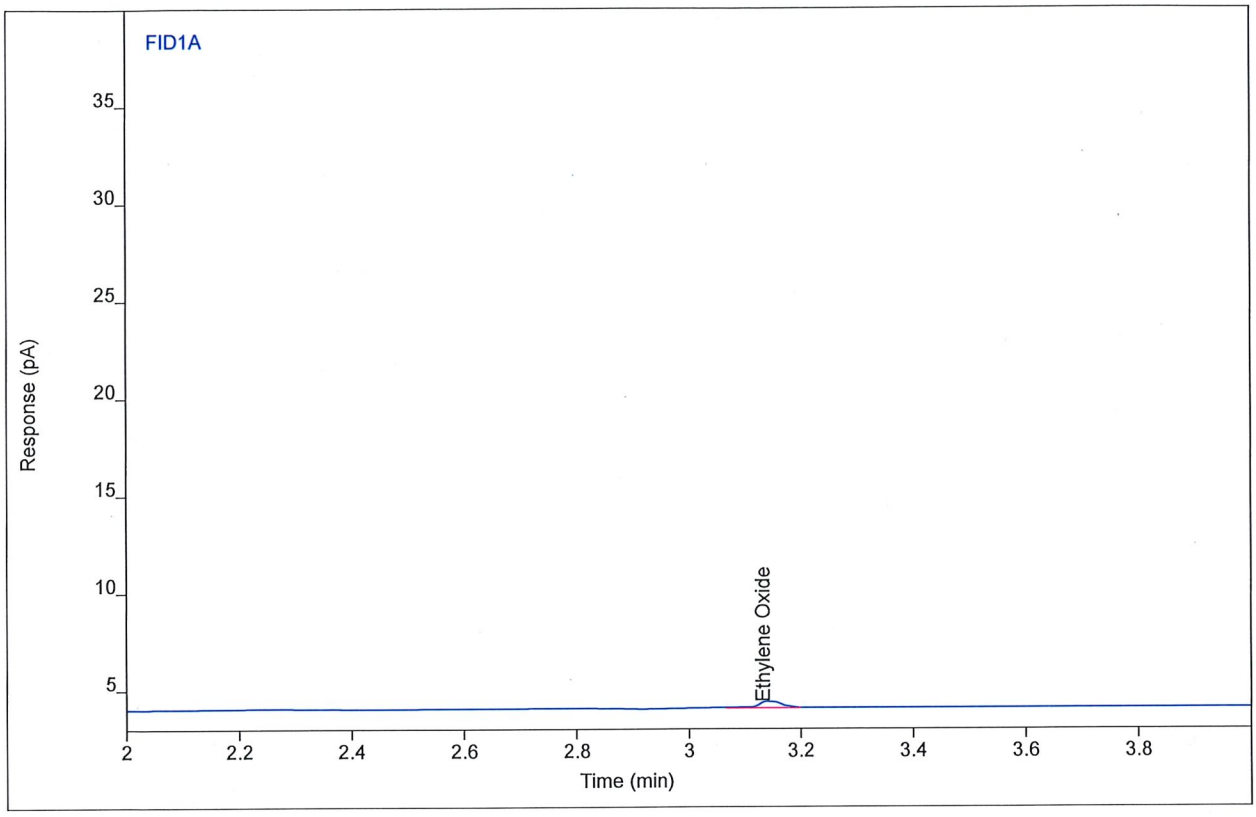
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	0.97870	0.34003	5.15291	1	5.15291	ppm

Chromatogram Report

Sample Name	gummop1536 #EO1 ENV(1=3700,4=80)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0403.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 5:48 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 10
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	MF	3.13	0.99033	0.36870	5.21321	1	5.21321	ppm

Analyst Peak Integration Comments

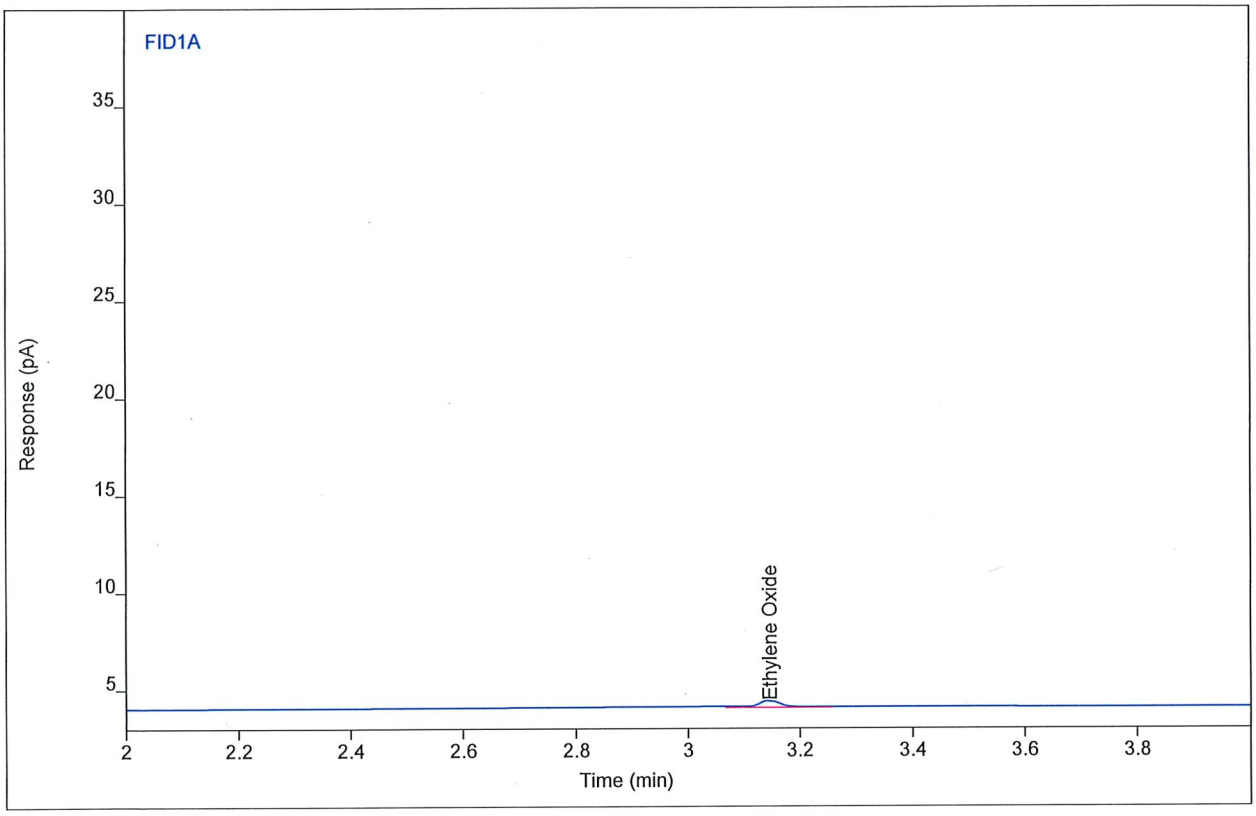
09:34:21 02/01/19 Justin Guenzler II - Baseline

Chromatogram Report

Sample Name	gummop1536 #EO1 ENV(1=3700,4=80)
Sequence Name	GUMMOP1536 ver.2
Inj Data File	016F0404.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/29/2019 6:06 PM
File Modified	2/1/2019 9:49 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 10
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	1/30/2019 6:05 AM
Printed	2/1/2019 9:55 AM



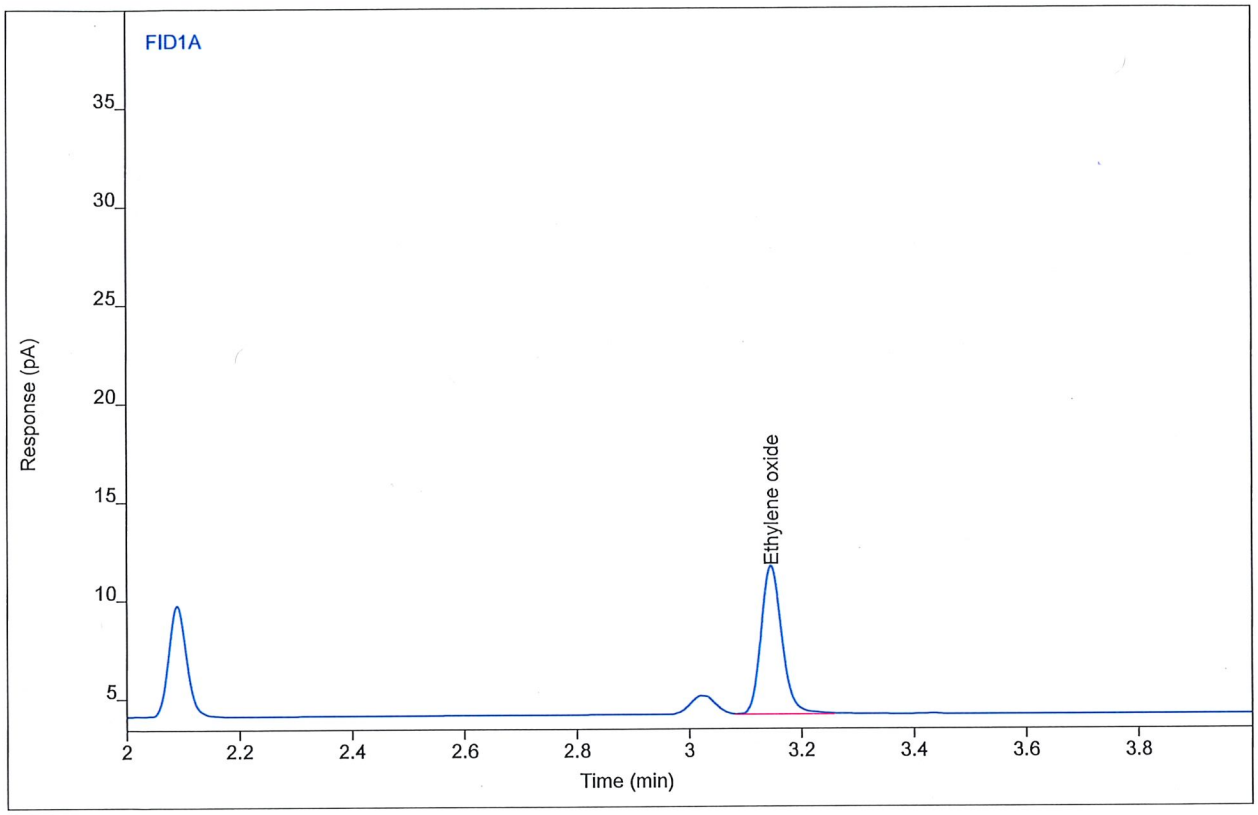
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene Oxide	BB	3.15	0.95773	0.32835	5.04281	1	5.04281	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.4
Inj Data File	016F0702.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 3:32 AM
File Modified	2/18/2019 6:19 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



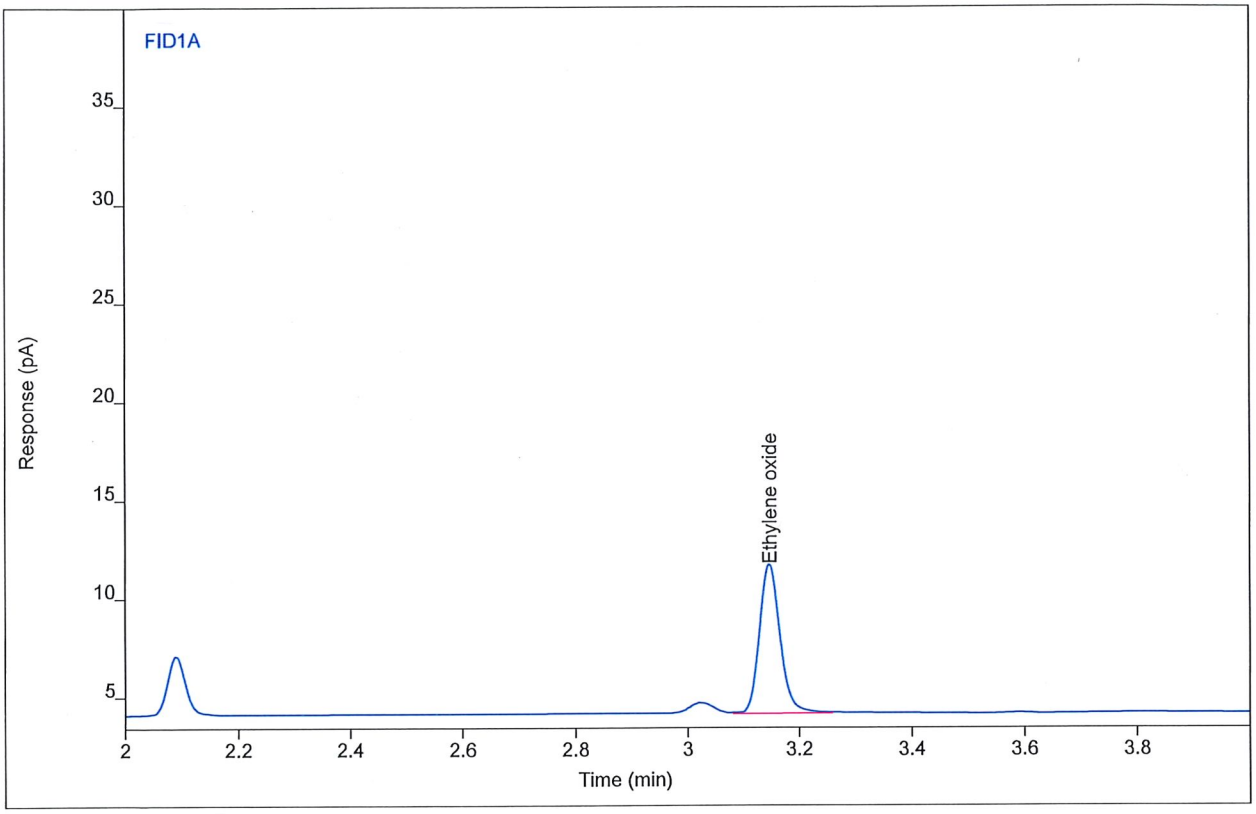
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	19.4184	7.09083	100.788	1	100.788	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.4
Inj Data File	016F0703.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 3:50 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



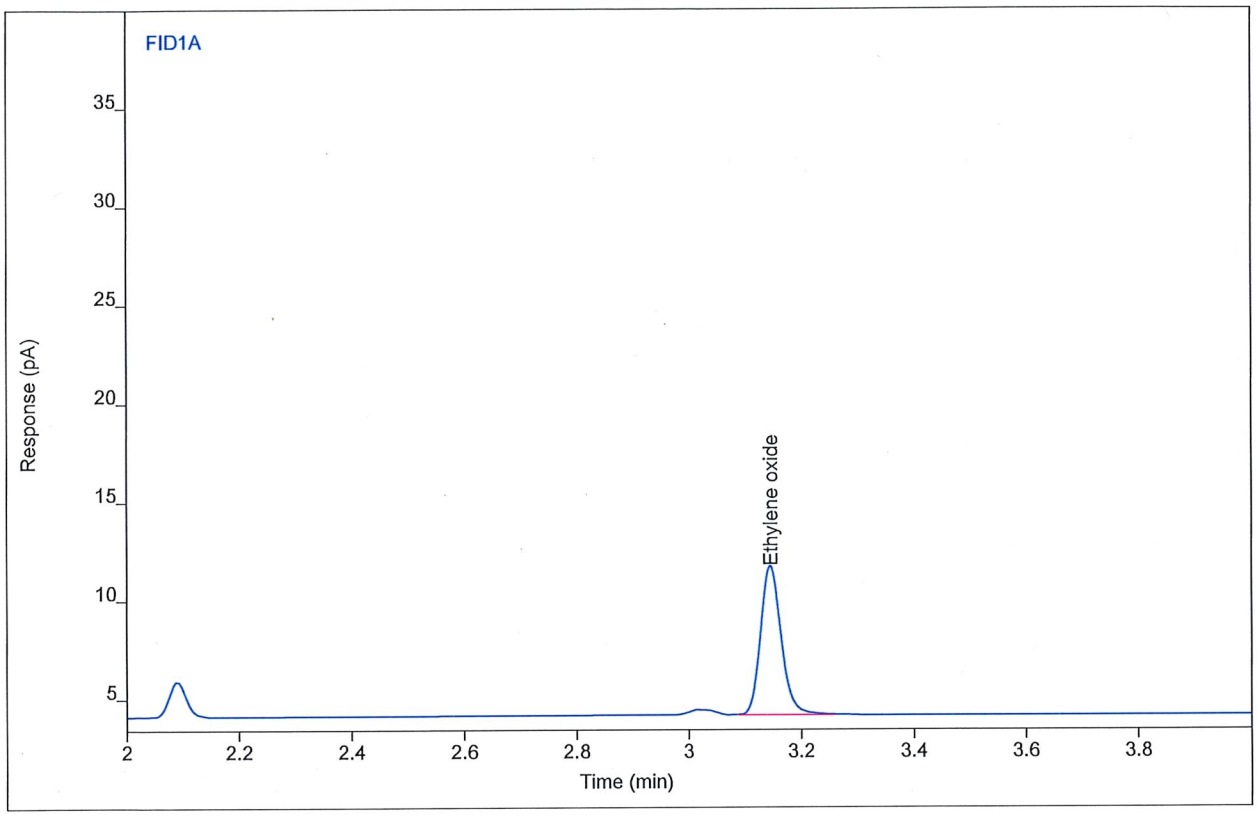
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	19.5214	7.13197	101.322	1	101.322	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1536 ver.4
Inj Data File	016F0704.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 4:08 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



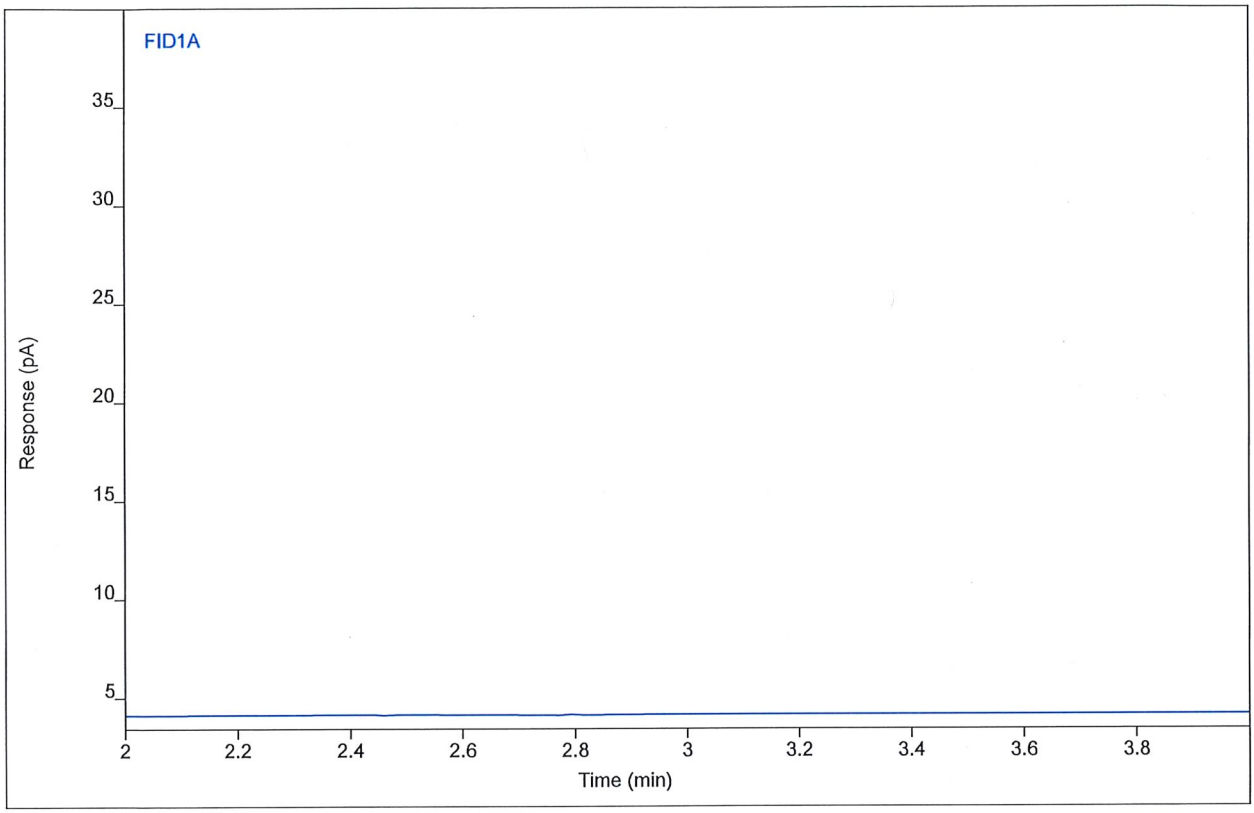
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	19.4121	7.09346	100.755	1	100.755	ppm

Chromatogram Report

Sample Name	zero air blank #LB
Sequence Name	GUMMOP1536 ver.4
Inj Data File	008F0801.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 4:24 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 8
Injection Volume	1000
Injection	1 of 5
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



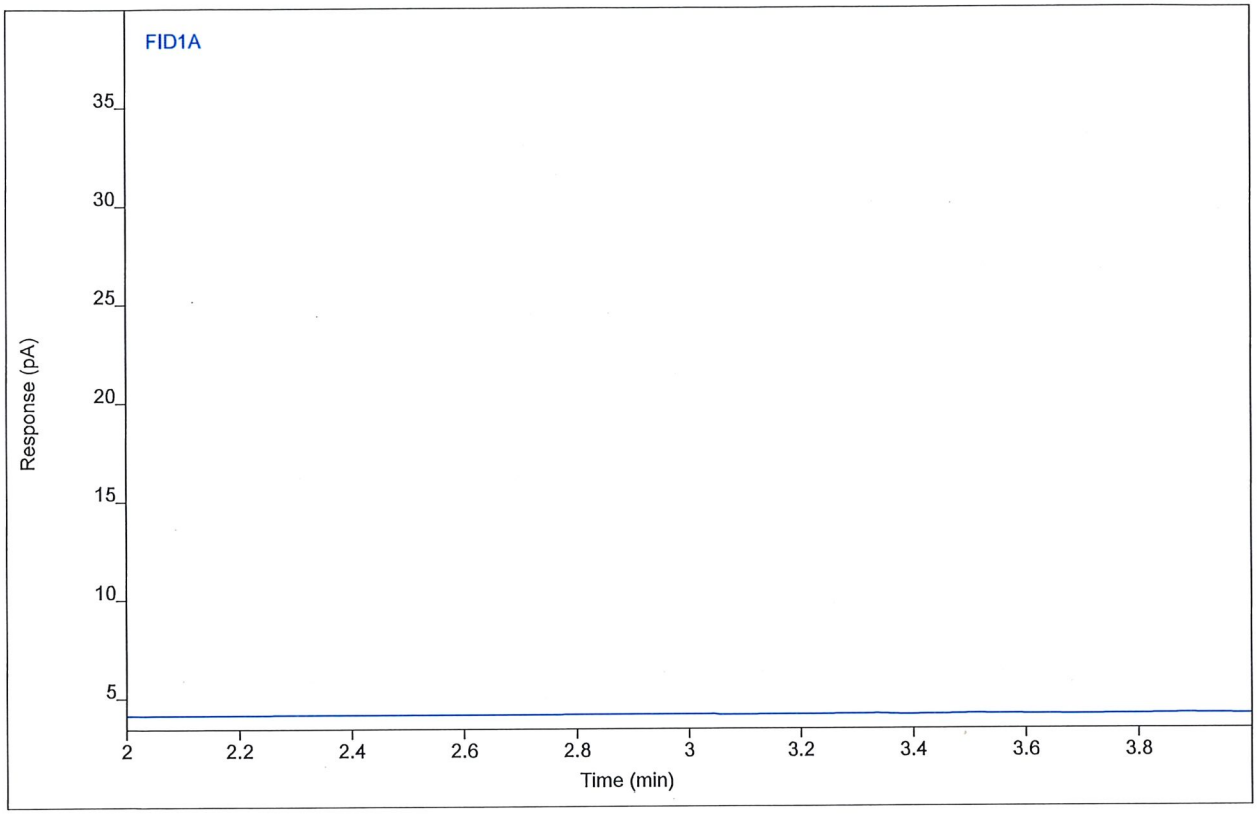
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	zero air blank #LB
Sequence Name	GUMMOP1536 ver.4
Inj Data File	008F0802.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 4:41 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 8
Injection Volume	1000
Injection	2 of 5
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



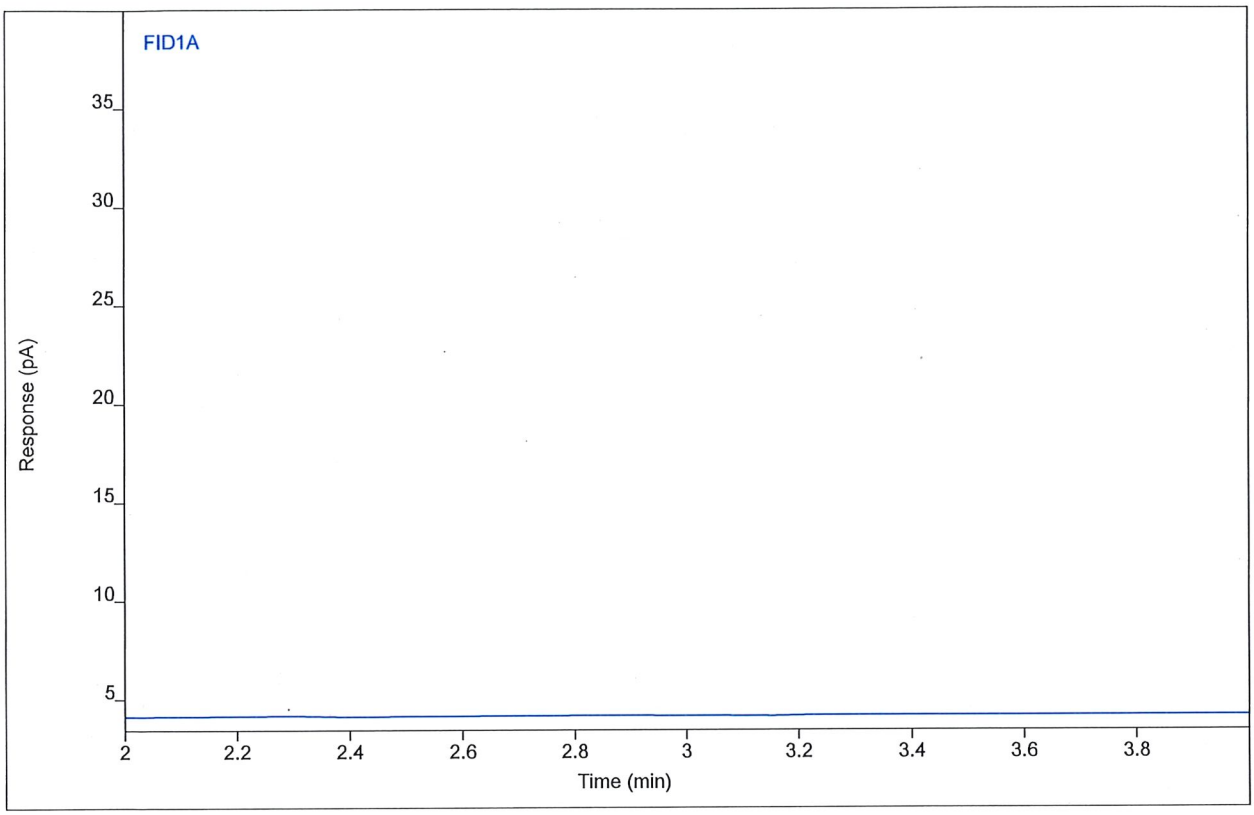
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	zero air blank #LB
Sequence Name	GUMMOP1536 ver.4
Inj Data File	008F0803.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/30/2019 4:57 AM
File Modified	2/18/2019 6:20 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 8
Injection Volume	1000
Injection	3 of 5
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



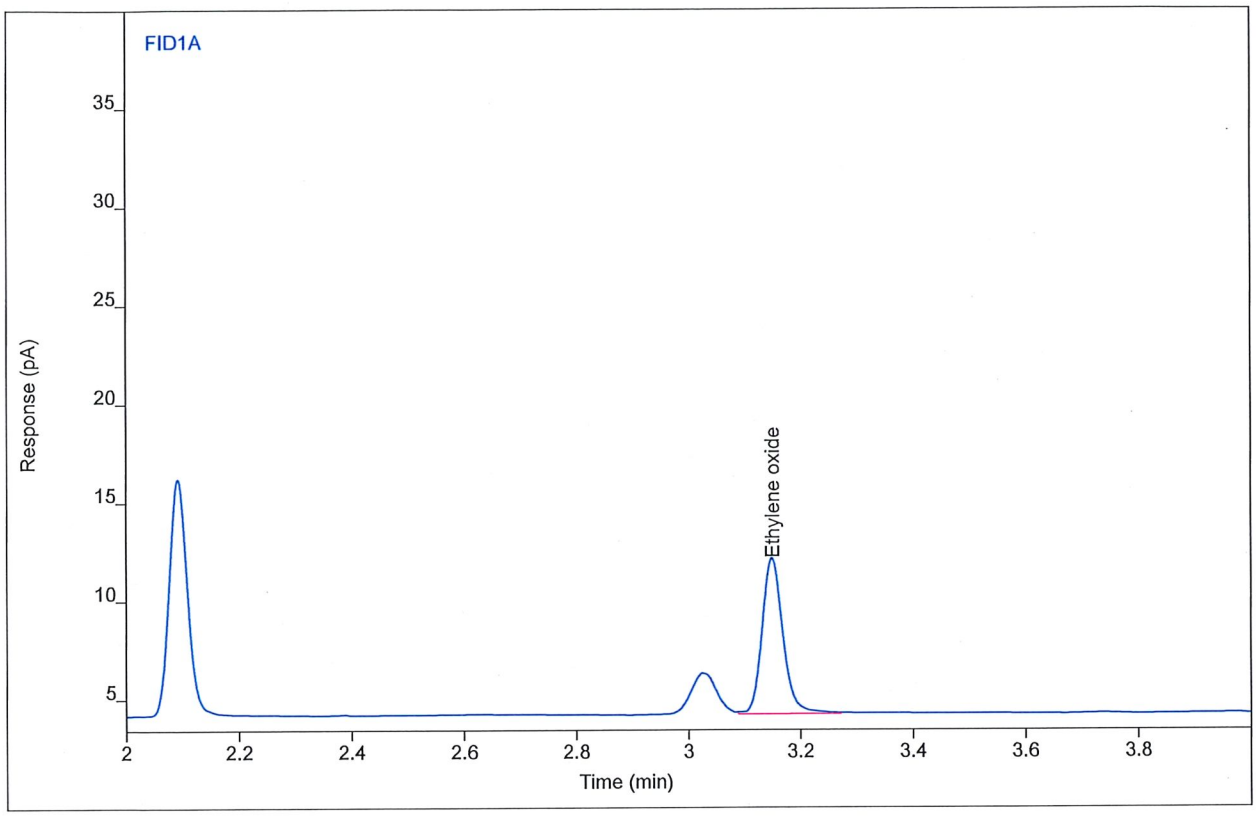
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide		(3.15)				1		

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1537 ver.8
Inj Data File	016F1202.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:32 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



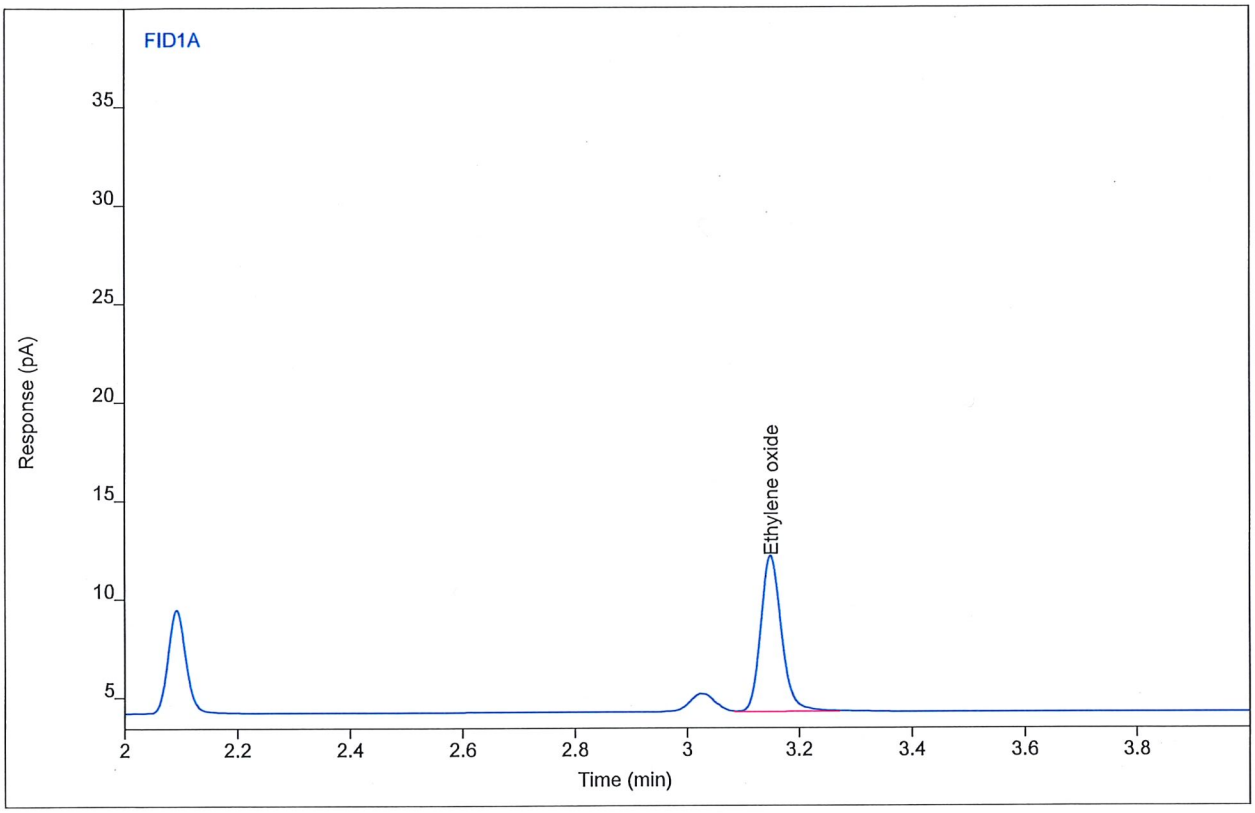
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	20.5149	7.62871	106.475	1	106.475	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1537 ver.8
Inj Data File	016F1203.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:50 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



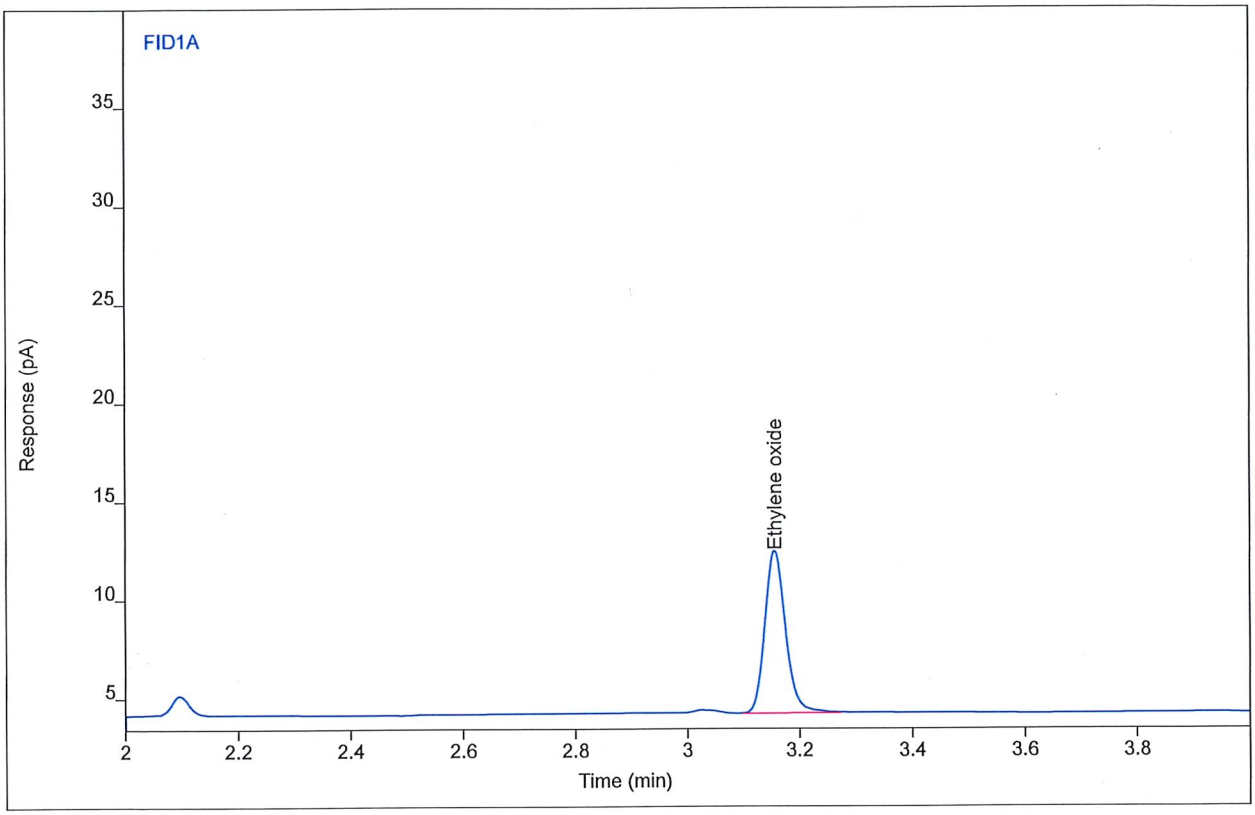
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	20.4786	7.64183	106.286	1	106.286	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1537 ver.8
Inj Data File	016F1204.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 6:35 AM
File Modified	2/18/2019 6:21 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	NA
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



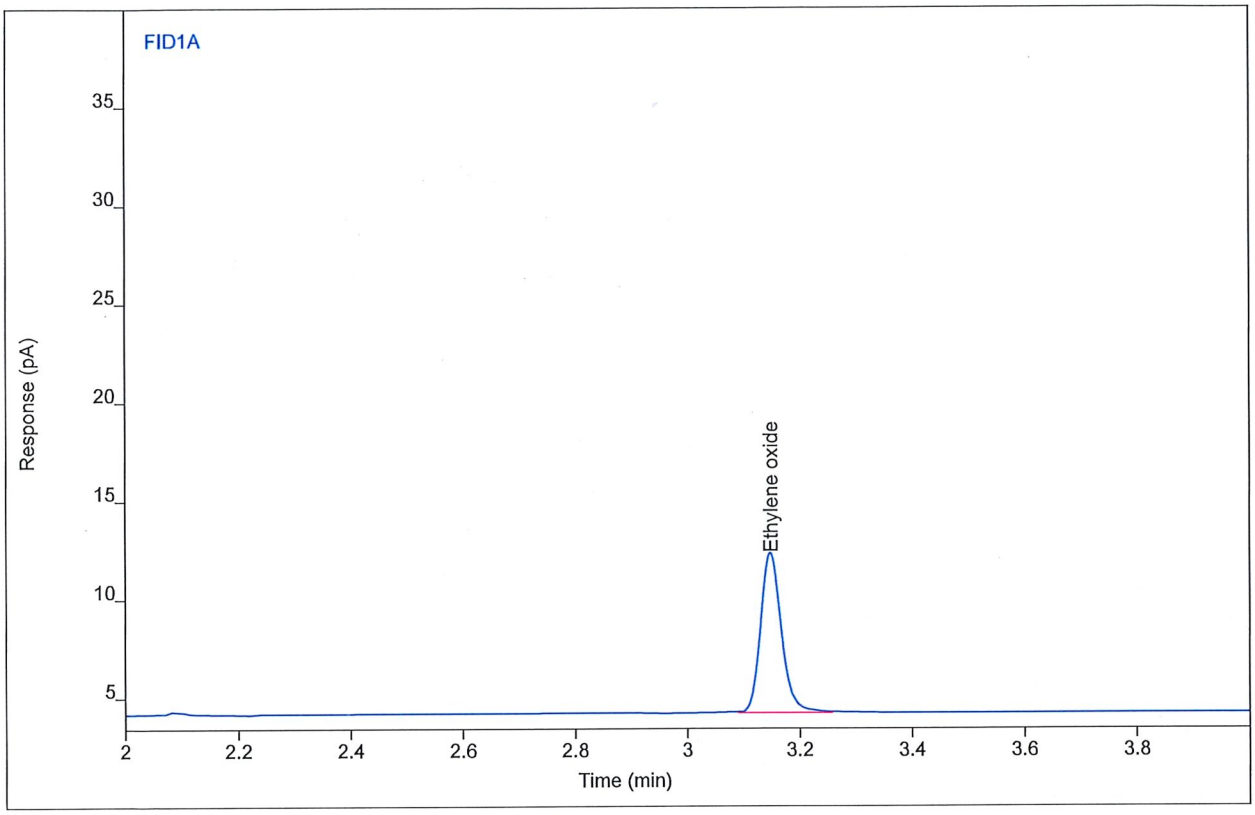
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.16	21.2143	7.95609	110.102	1	110.102	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F1302.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:06 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



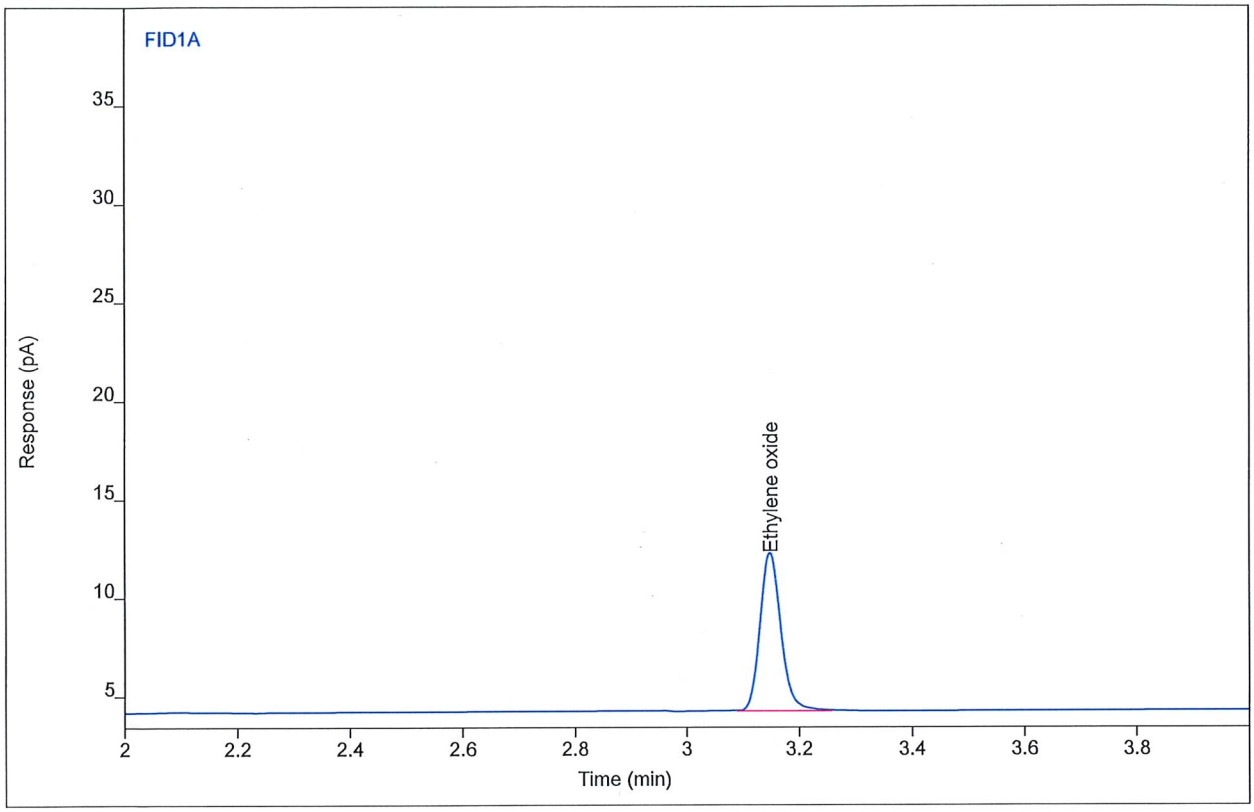
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	20.9506	7.79058	108.734	1	108.734	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F1303.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:24 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



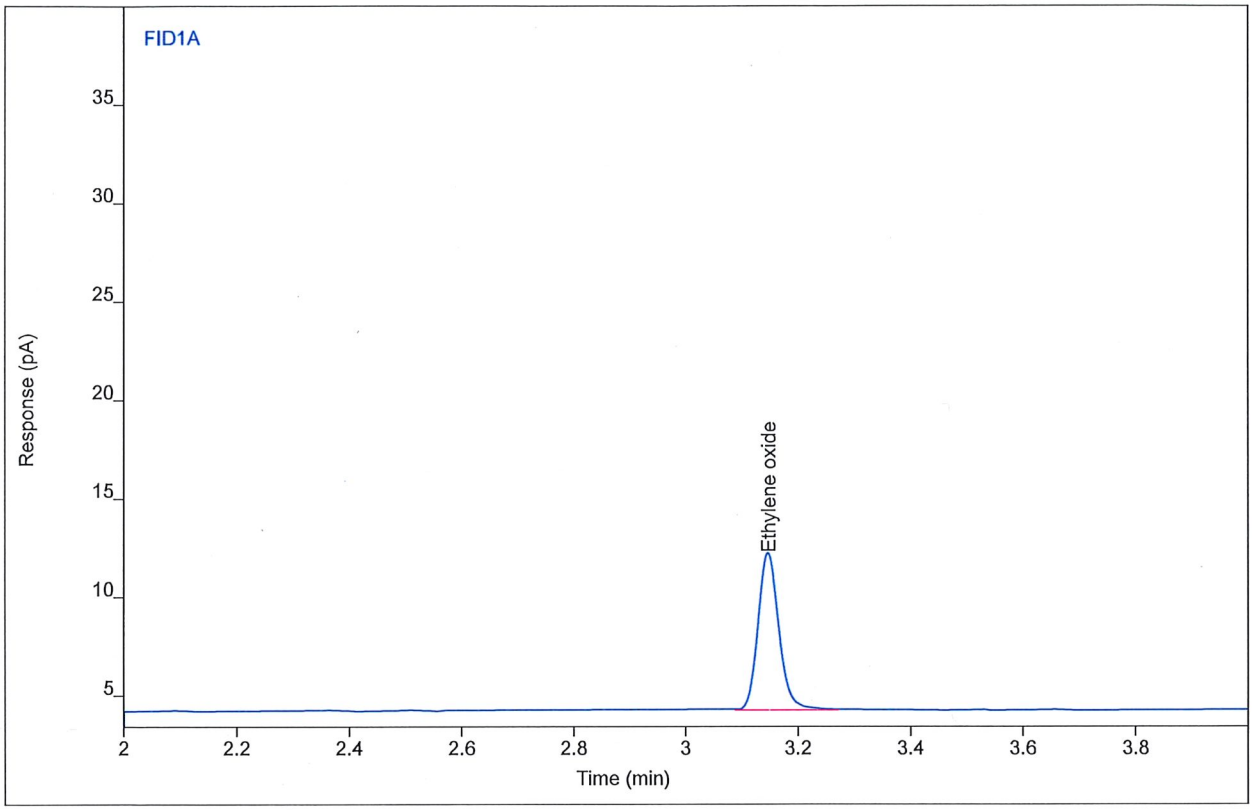
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	20.5939	7.71506	106.885	1	106.885	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F1304.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	1/31/2019 3:42 PM
File Modified	2/18/2019 6:24 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



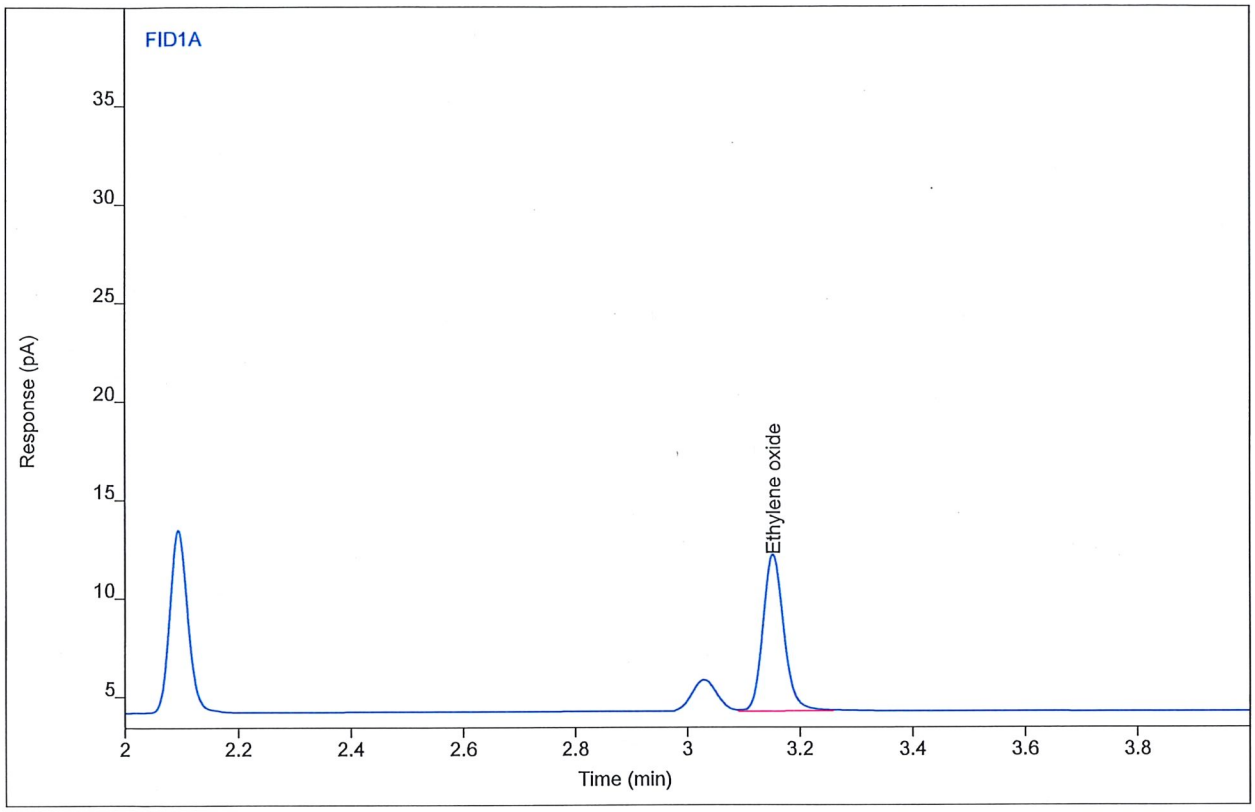
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	20.6142	7.56283	106.990	1	106.990	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F2302.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 3:32 AM
File Modified	2/18/2019 6:25 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



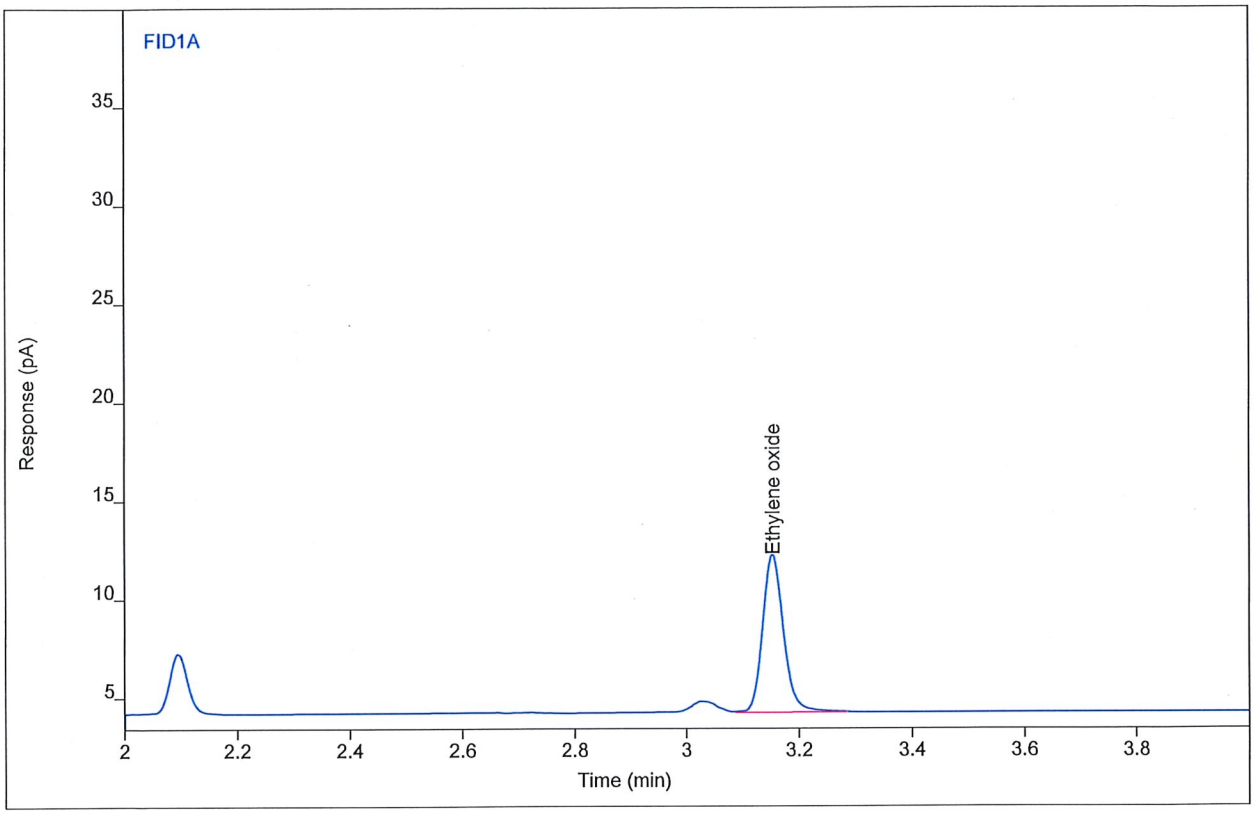
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	20.4678	7.75449	106.231	1	106.231	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F2303.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 3:50 AM
File Modified	2/18/2019 6:25 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



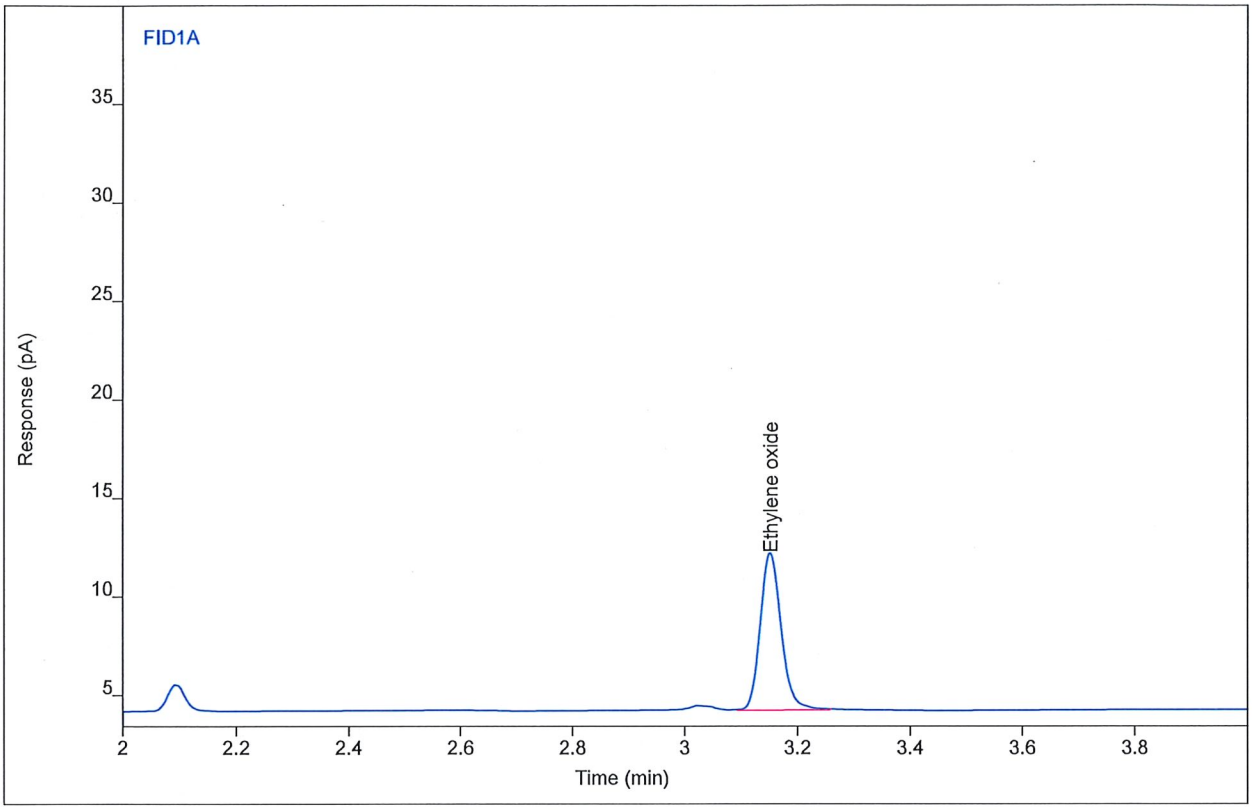
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	20.6920	7.78709	107.393	1	107.393	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1538A ver.4
Inj Data File	016F2304.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 4:08 AM
File Modified	2/18/2019 6:25 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM

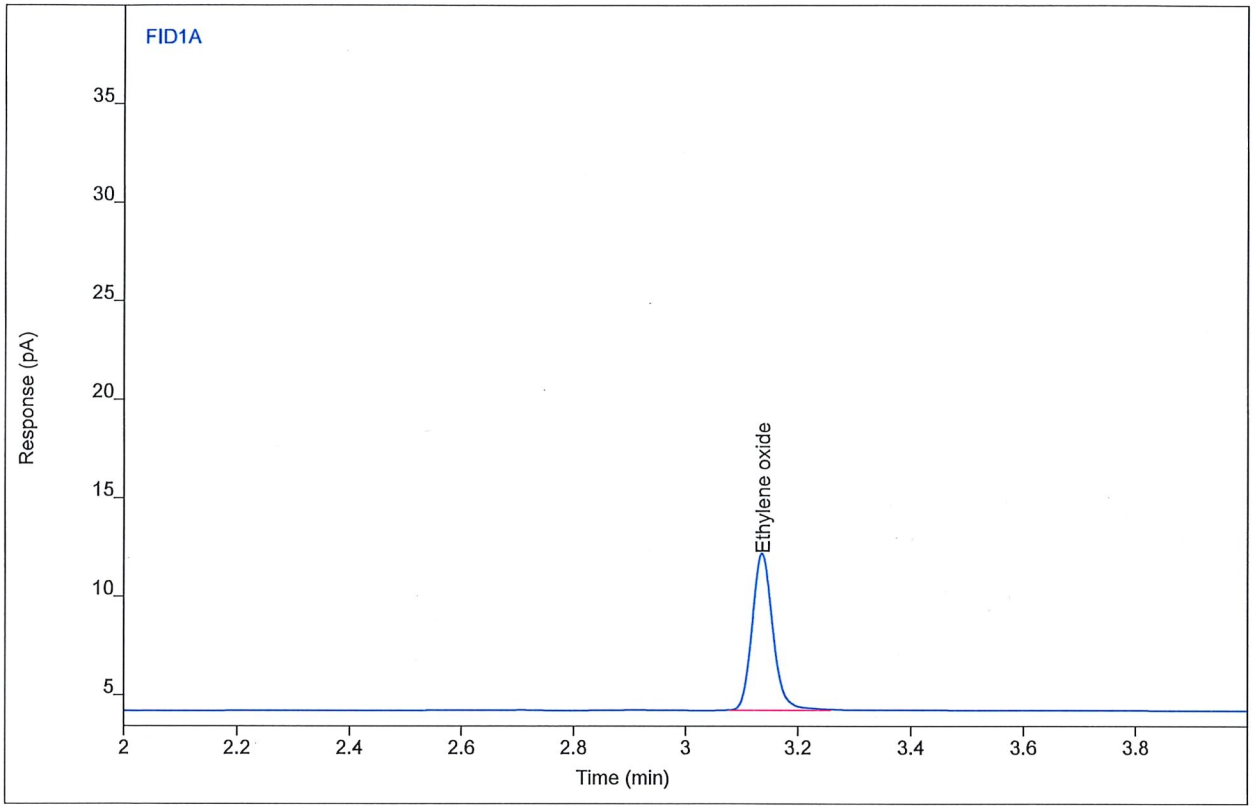


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.15	20.5107	7.77969	106.453	1	106.453	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)	Sample Type	Calibration
Sequence Name	GUMMOP1540 ver.3	Vial Number	Vial 16
Inj Data File	016F0602.D	Injection Volume	1000
File Location	GC/2019/Gummo/Quarter 1	Injection	2 of 4
Injection Date	2/1/2019 4:26 PM	Acquisition Method	AQ_GUMMOP1466.M
File Modified	2/18/2019 6:26 AM	Analysis Method	GUMMOP1536F_EO.M
Instrument		Method Modified	2/18/2019 6:19 AM
Operator	Justin Guenzler	Printed	2/18/2019 7:26 AM



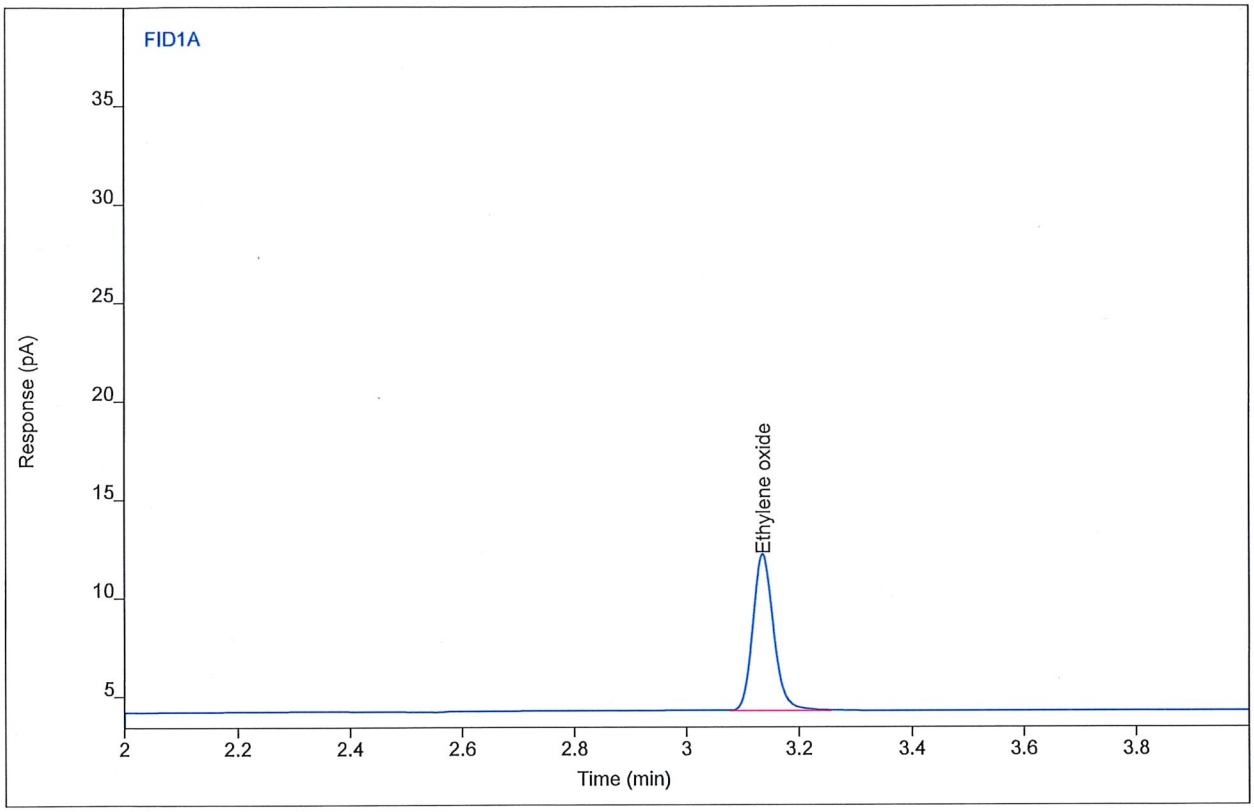
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	20.4787	7.72867	106.287	1	106.287	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1540 ver.3
Inj Data File	016F0603.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 4:45 PM
File Modified	2/18/2019 6:26 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



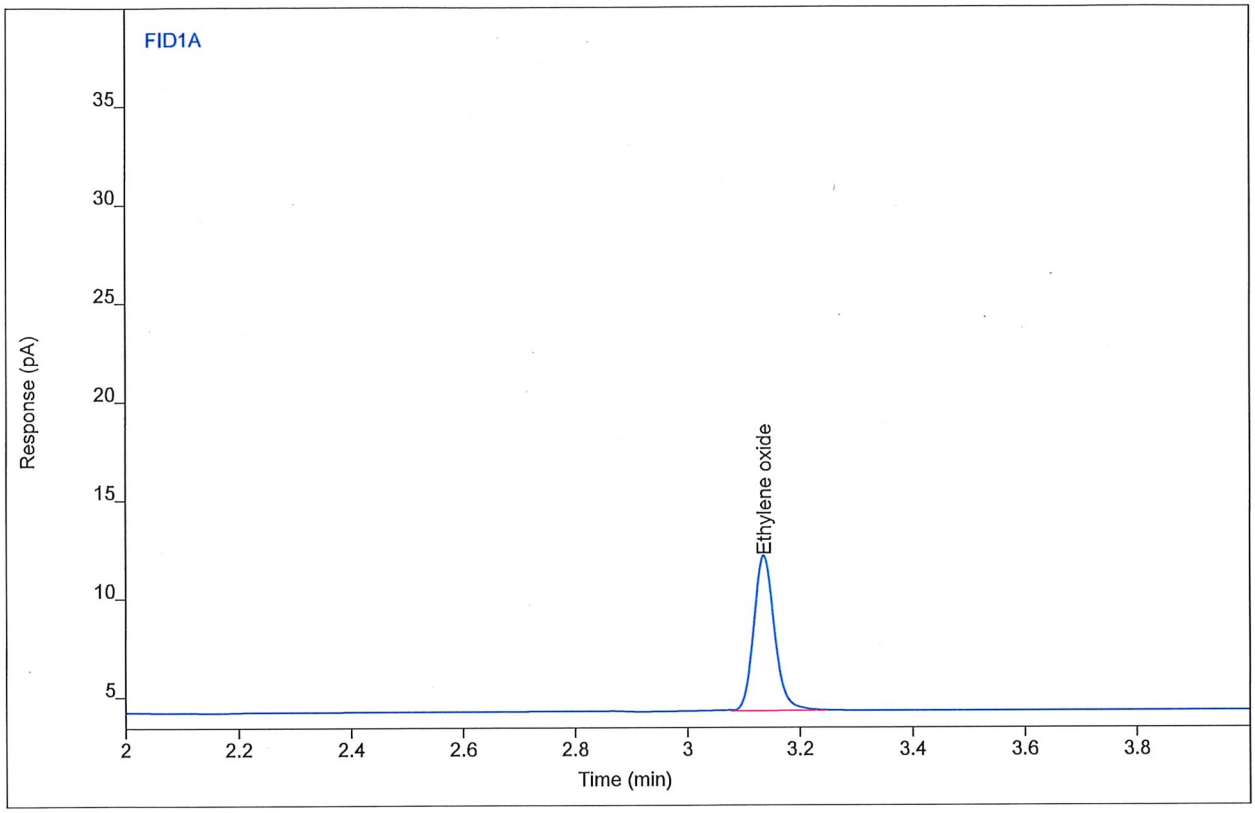
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	20.4263	7.65836	106.015	1	106.015	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1540 ver.3
Inj Data File	016F0604.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/1/2019 5:03 PM
File Modified	2/18/2019 6:26 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



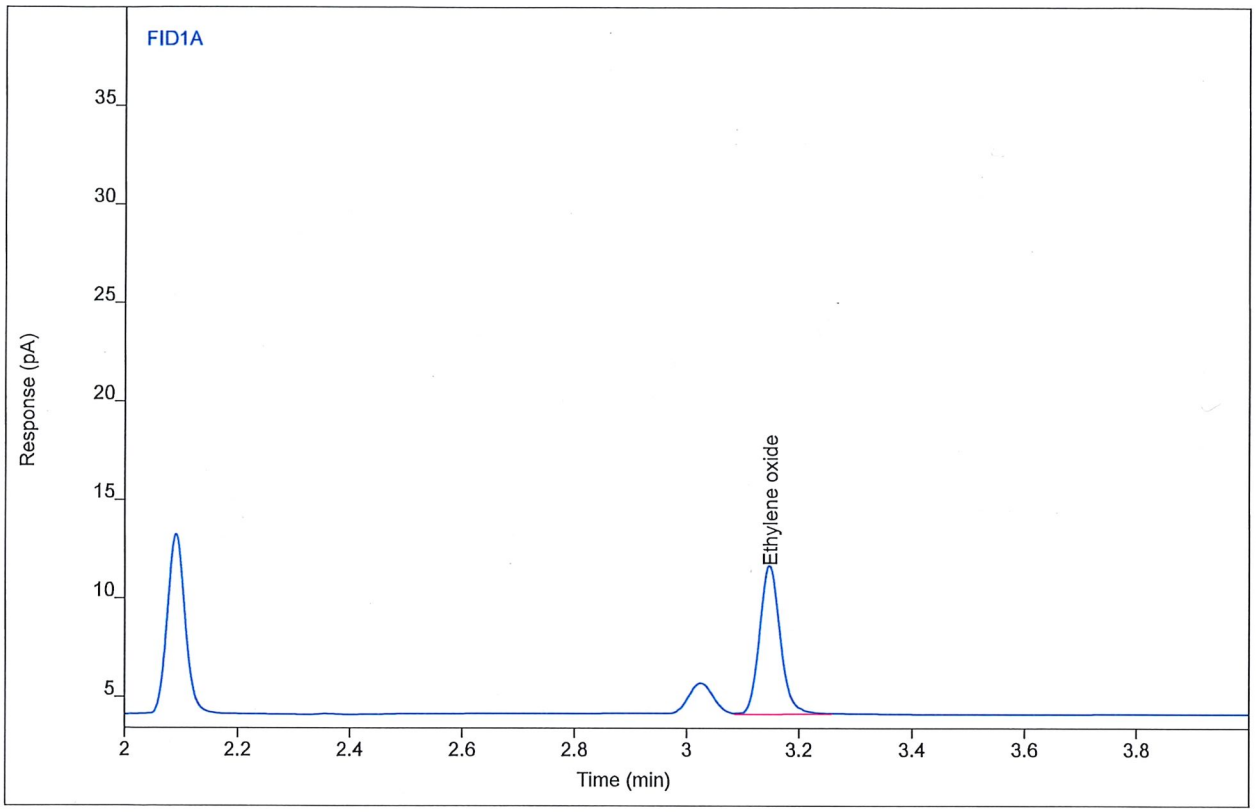
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	20.3026	7.60574	105.374	1	105.374	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1540 ver.3
Inj Data File	016F0902.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 3:32 AM
File Modified	2/18/2019 6:27 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



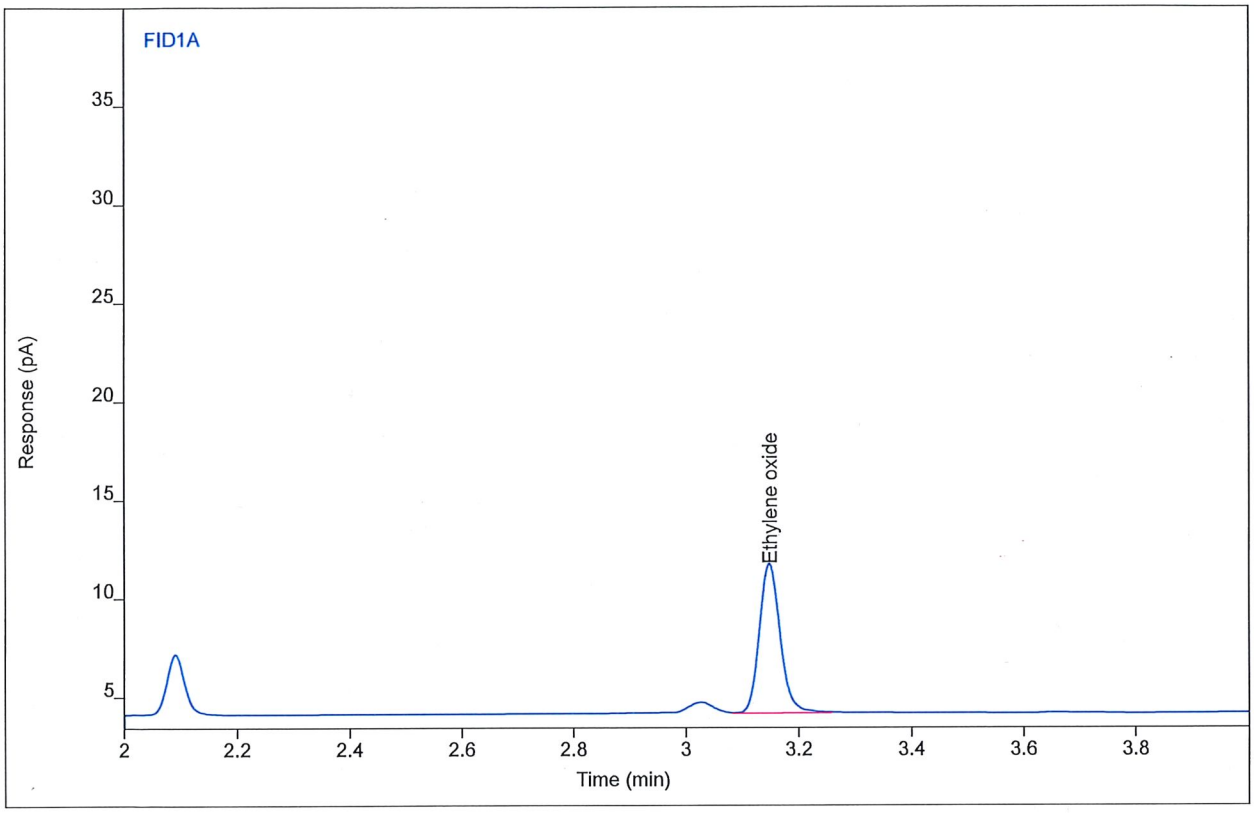
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	19.4251	7.24232	100.823	1	100.823	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1540 ver.3
Inj Data File	016F0903.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 3:50 AM
File Modified	2/18/2019 6:27 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



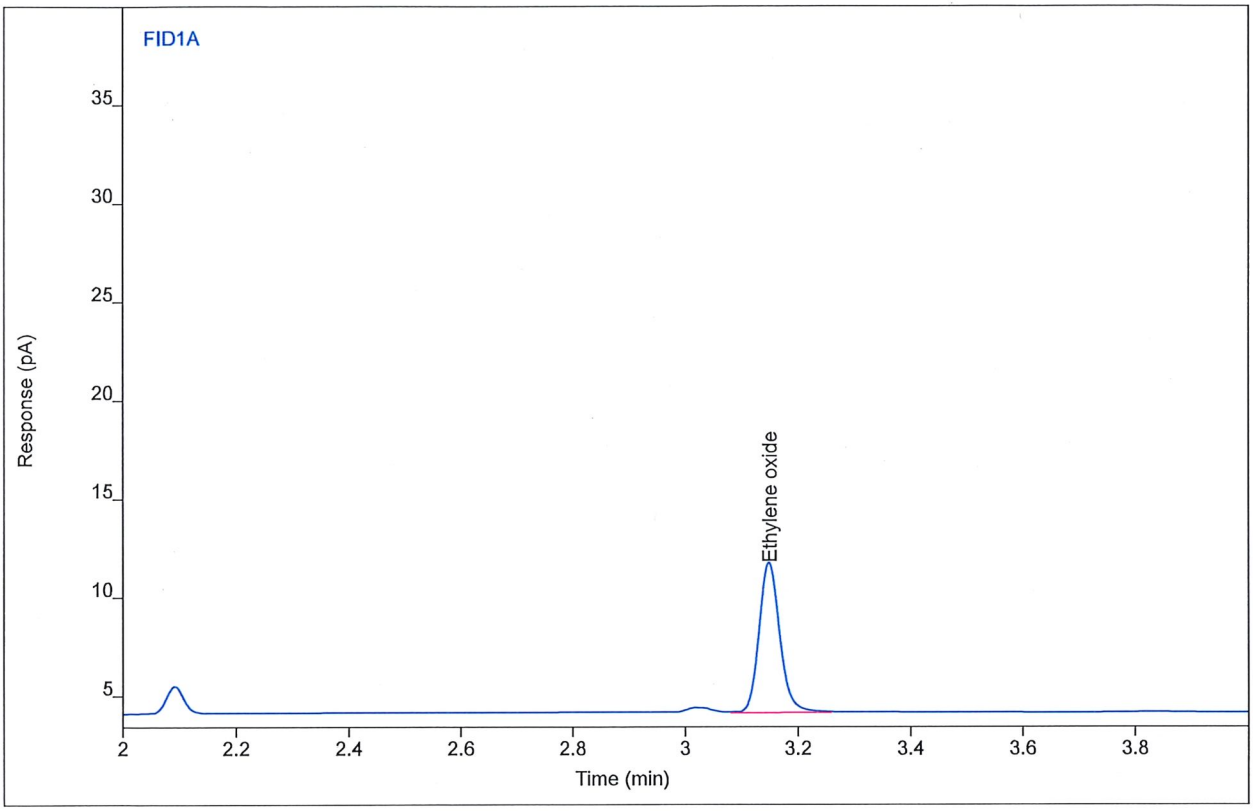
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	19.4704	7.26195	101.058	1	101.058	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1540 ver.3
Inj Data File	016F0904.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/4/2019 4:08 AM
File Modified	2/18/2019 6:27 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Calibration
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



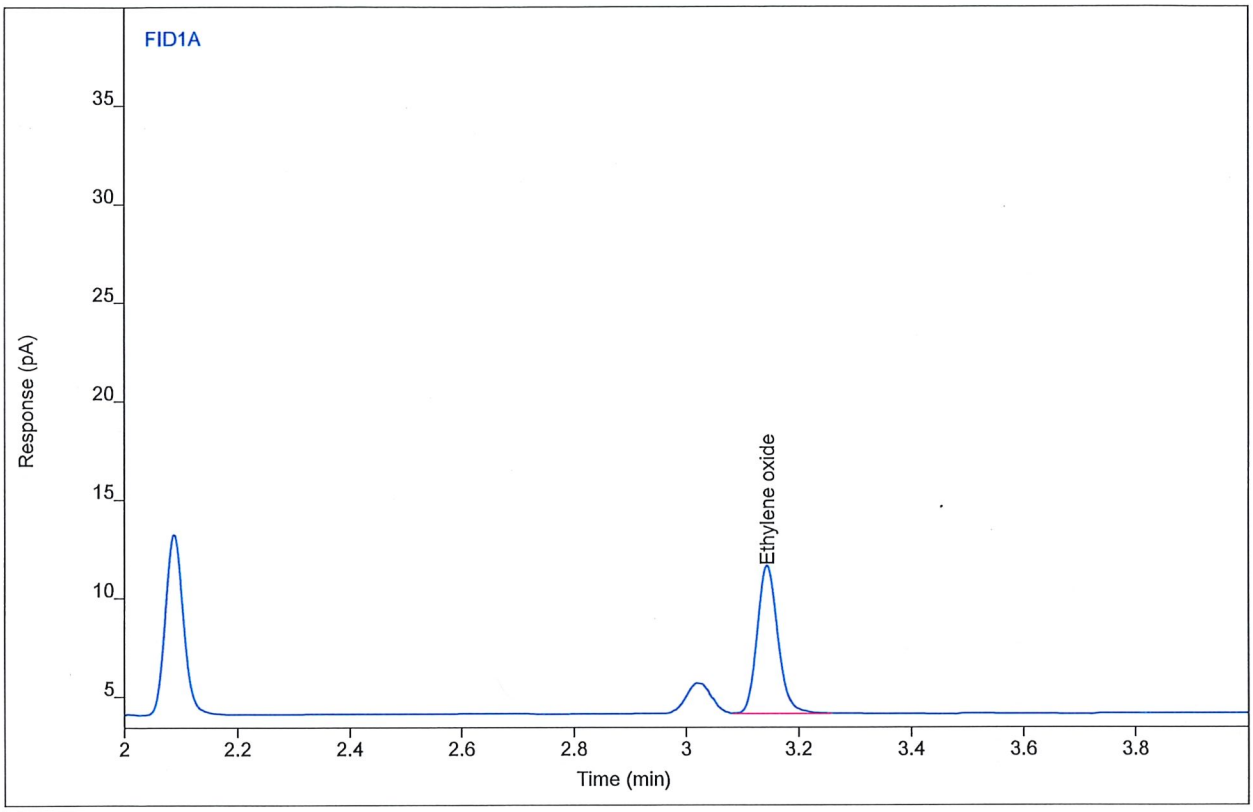
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	19.5717	7.31830	101.583	1	101.583	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542 ver.4
Inj Data File	016F0302.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 3:32 AM
File Modified	2/18/2019 6:30 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



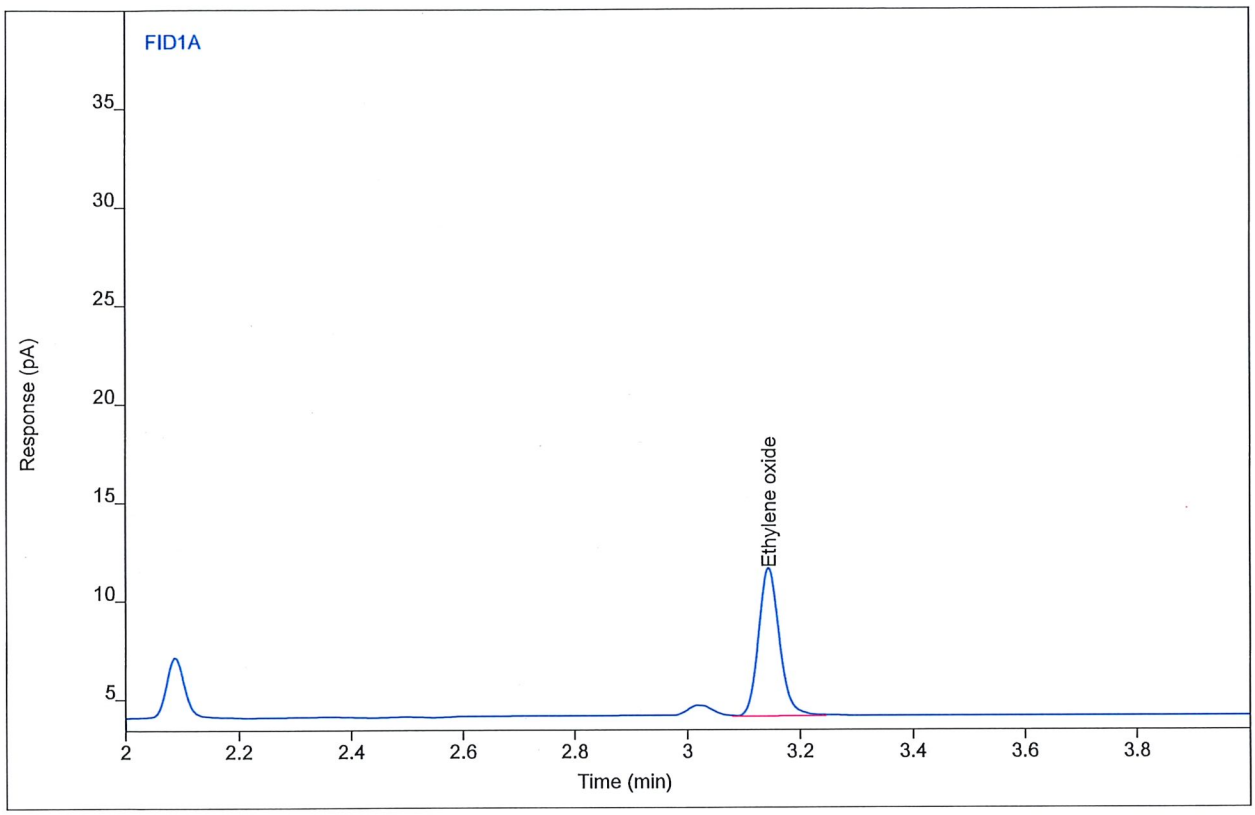
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.14	19.2779	7.16754	100.059	1	100.059	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542 ver.4
Inj Data File	016F0303.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 3:50 AM
File Modified	2/18/2019 6:30 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



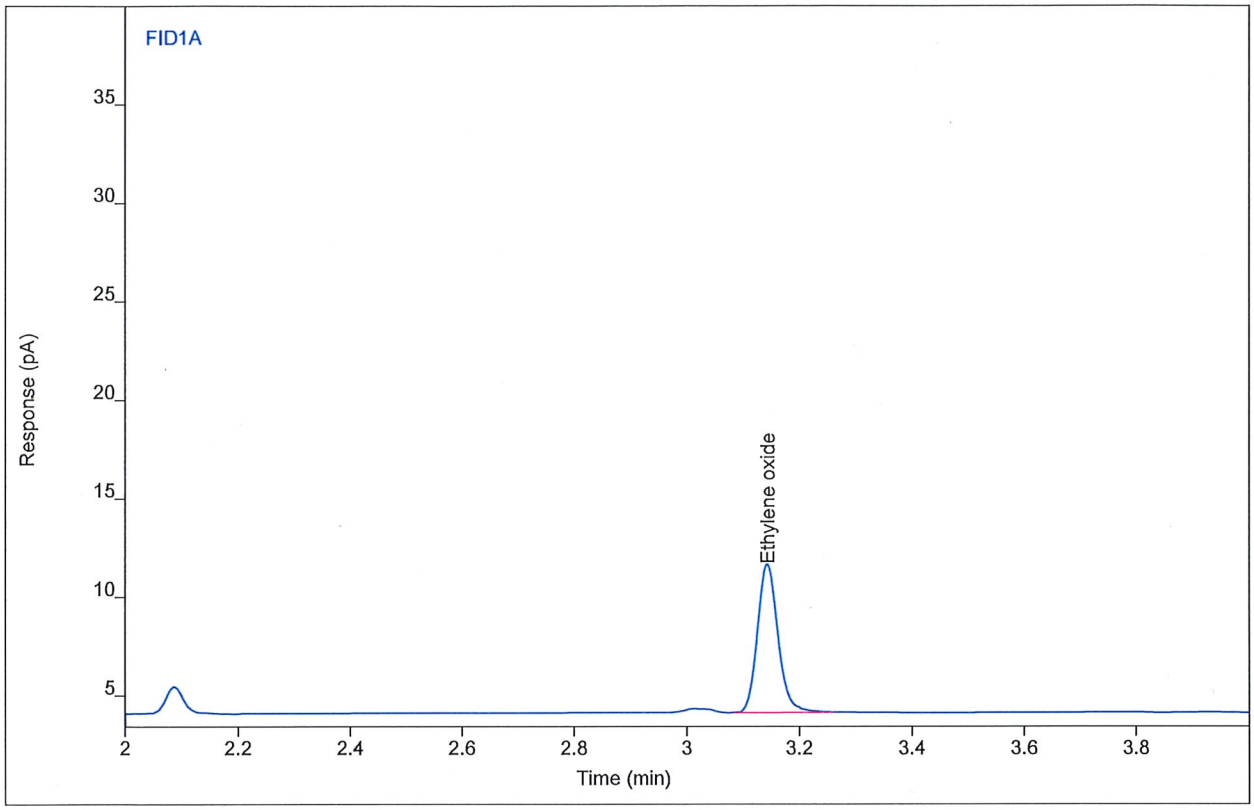
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.14	19.3623	7.12400	100.497	1	100.497	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542 ver.4
Inj Data File	016F0304.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/5/2019 4:08 AM
File Modified	2/18/2019 6:30 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	4 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



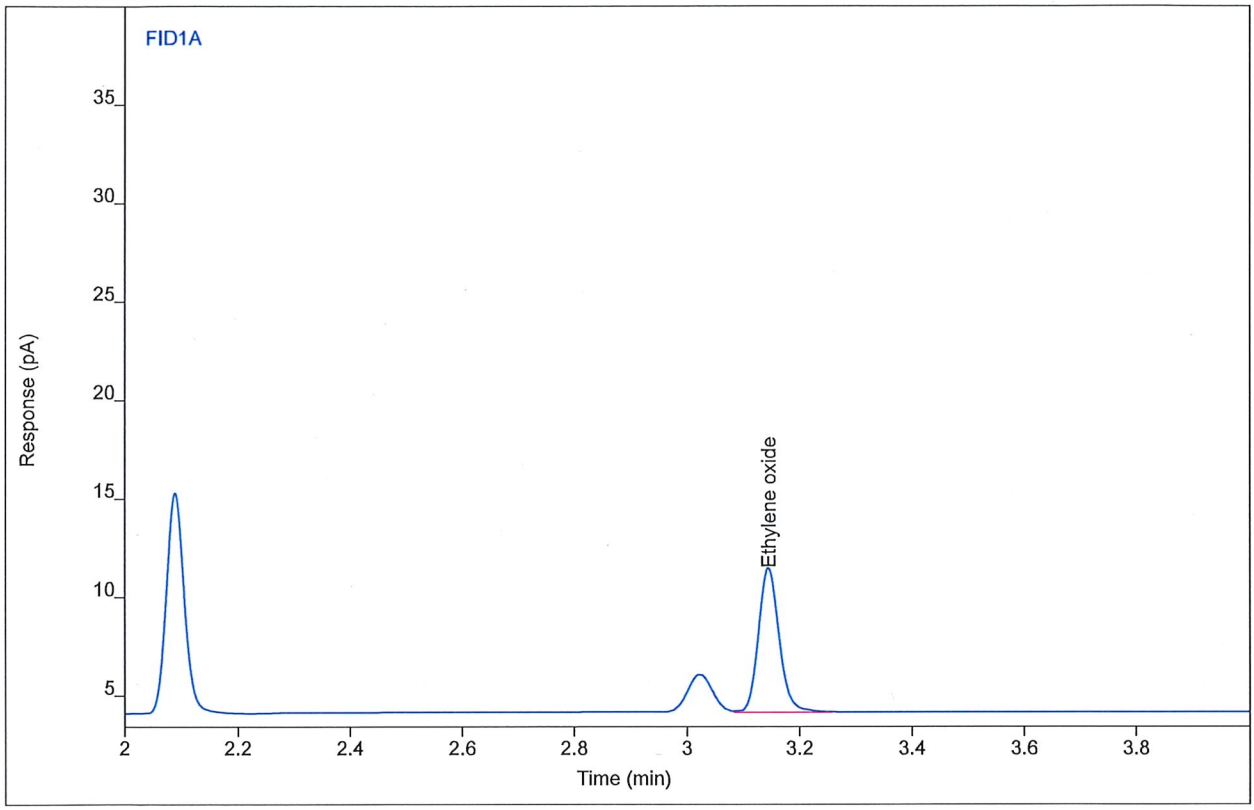
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	BB	3.14	19.3383	7.21193	100.372	1	100.372	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542A ver.5
Inj Data File	016F1401.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/6/2019 3:14 AM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	1 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



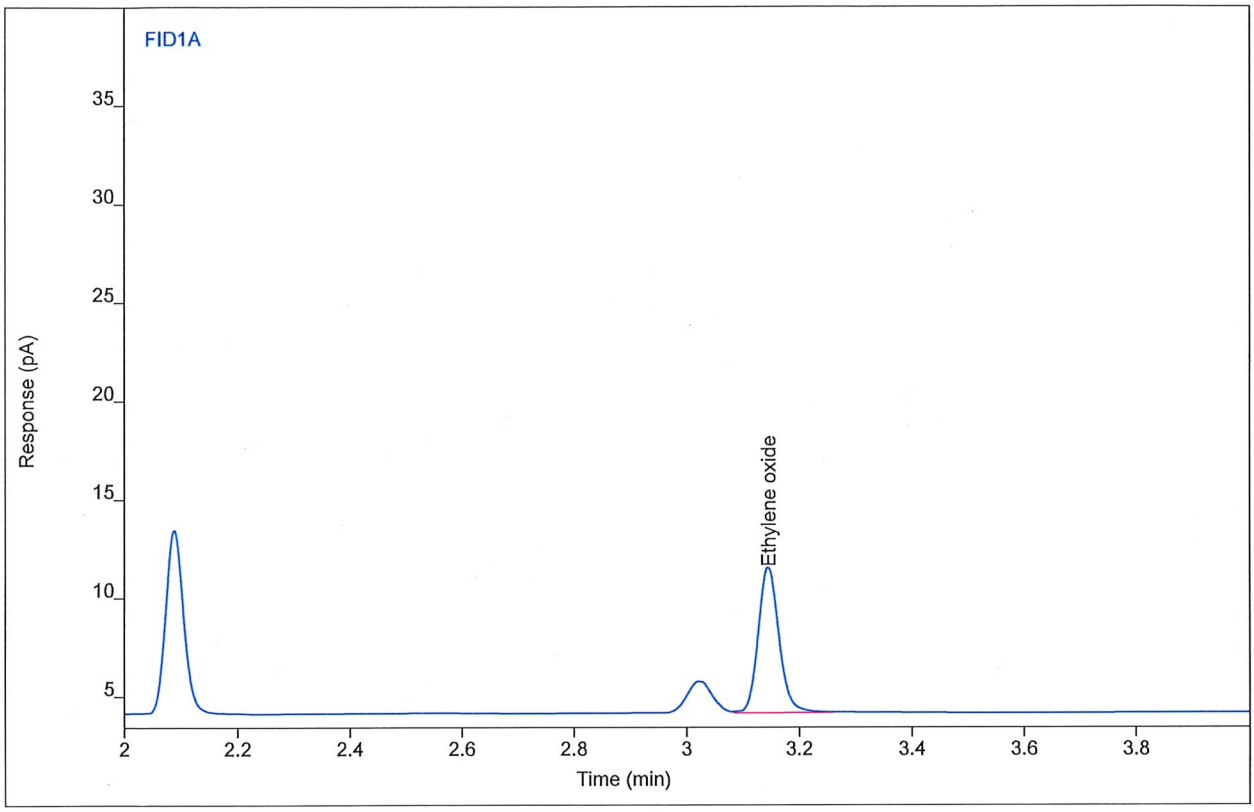
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	18.7886	6.93803	97.5214	1	97.5214	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542A ver.5
Inj Data File	016F1402.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/6/2019 3:32 AM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	2 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



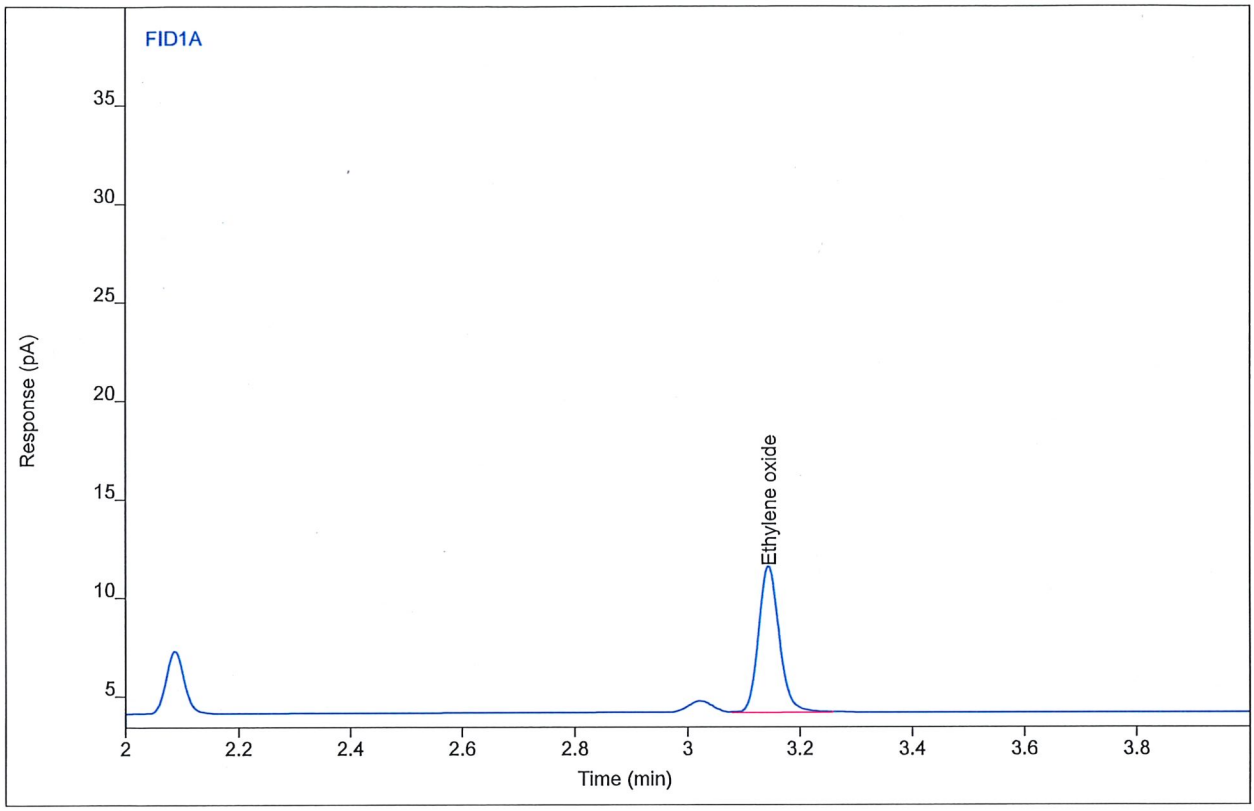
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.15	18.9409	7.00738	98.3113	1	98.3113	ppm

Chromatogram Report

Sample Name	gummop1536 #EO3 ENV(1=600,4=410)
Sequence Name	GUMMOP1542A ver.5
Inj Data File	016F1403.D
File Location	GC/2019/Gummo/Quarter 1
Injection Date	2/6/2019 3:50 AM
File Modified	2/18/2019 6:32 AM
Instrument	
Operator	Justin Guenzler

Enthalpy Analytical

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	1000
Injection	3 of 4
Acquisition Method	AQ_GUMMOP1466.M
Analysis Method	GUMMOP1536F_EO.M
Method Modified	2/18/2019 6:19 AM
Printed	2/18/2019 7:26 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene oxide	VB	3.14	19.1265	7.06071	99.2738	1	99.2738	ppm

dified on: 10/19/2018 at 9:50:33 AM

==========

6890 GC METHOD

==========

OVEN
Initial temp: 35 C (On)
Initial time: 2.20 min
Ramps:

#	Rate	Final temp	Final time
1	15.00	70	0.07
2	30.00	250	1.00
3	0 (Off)		

Post temp: 50 C
Post time: 0.00 min
Run time: 11.60 min
Maximum temp: 250 C
Equilibration time: 0.20 min

FRONT INLET (SPLIT/SPLITLESS)
Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.0 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)
Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5.1:1
Split flow: 10.1 mL/min
Total flow: 18.3 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1
Capillary Column
Model Number: 10198
Description: RTX-1 S/N - 1452472
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2
Capillary Column
Model Number: 10970
Description: RTX-624 S/N - 926827
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)
Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)
Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1
Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2
Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1
Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES
Valve 1 Gas Sampling

POST RUN
Post Time: 0.00 min

```
dified on: 10/19/2018 at 9:50:33 AM
        Loop Volume: 1.000 mL
        Load Time: 0.70 min
        Inject Time: 0.50 min
        Inlet:  Front Inlet
     Valve 2  Gas Sampling
        Loop Volume: 1.000 mL
        Load Time: 0.70 min
        Inject Time: 0.50 min
        Inlet:  Back Inlet
     Valve 7  Multiposition 16
        BCD input:  inverted
        Switch Time:  1.0 sec


  TIME TABLE
     Time(min)       Parameter & Setpoint
        0.10       Multi-Valve Position:         1
```

dified on: 10/19/2018 at 9:51:39 AM

6890 GC METHOD

OVEN
- Initial temp: 35 C (On)
- Initial time: 2.20 min
- Maximum temp: 250 C
- Equilibration time: 0.20 min
- Ramps:

#	Rate	Final temp	Final time
1	15.00	70	0.07
2	0 (Off)		

- Post temp: 50 C
- Post time: 0.00 min
- Run time: 4.60 min

FRONT INLET (SPLIT/SPLITLESS)
- Mode: Split
- Initial temp: 160 C (On)
- Pressure: 4.9 psi (On)
- Split ratio: 2:1
- Split flow: 3.9 mL/min
- Total flow: 12.0 mL/min
- Gas saver: Off
- Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)
- Mode: Split
- Initial temp: 160 C (On)
- Pressure: 4.7 psi (On)
- Split ratio: 5.1:1
- Split flow: 10.1 mL/min
- Total flow: 18.3 mL/min
- Gas saver: Off
- Gas type: Hydrogen

COLUMN 1
- Capillary Column
- Model Number: 10198
- Description: RTX-1 S/N - 1452472
- Max temperature: 280 C
- Nominal length: 30.0 m
- Nominal diameter: 320.00 um
- Nominal film thickness: 4.00 um
- Mode: constant flow
- Initial flow: 2.0 mL/min
- Nominal init pressure: 4.9 psi
- Average velocity: 38 cm/sec
- Inlet: Front Inlet
- Outlet: Front Detector
- Outlet pressure: ambient

COLUMN 2
- Capillary Column
- Model Number: 10970
- Description: RTX-624 S/N - 926827
- Max temperature: 280 C
- Nominal length: 30.0 m
- Nominal diameter: 320.00 um
- Nominal film thickness: 1.80 um
- Mode: constant flow
- Initial flow: 2.0 mL/min
- Nominal init pressure: 4.7 psi
- Average velocity: 37 cm/sec
- Inlet: Back Inlet
- Outlet: Back Detector
- Outlet pressure: ambient

FRONT DETECTOR (FID)
- Temperature: 250 C (On)
- Hydrogen flow: 40.0 mL/min (On)
- Air flow: 450.0 mL/min (On)
- Mode: Constant makeup flow
- Makeup flow: 45.0 mL/min (On)
- Makeup Gas Type: Nitrogen
- Flame: On
- Electrometer: On
- Lit offset: 2.0

BACK DETECTOR (FID)
- Temperature: 250 C (On)
- Hydrogen flow: 40.0 mL/min (On)
- Air flow: 450.0 mL/min (On)
- Mode: Constant makeup flow
- Makeup flow: 45.0 mL/min (On)
- Makeup Gas Type: Nitrogen
- Flame: On
- Electrometer: On
- Lit offset: 2.0

SIGNAL 1
- Data rate: 20 Hz
- Type: front detector
- Save Data: On

SIGNAL 2
- Data rate: 20 Hz
- Type: back detector
- Save Data: On

THERMAL AUX 1
- Use: Valve Box Heater
- Initial temp: 120 C (On)

VALVES
- Valve 1 Gas Sampling
  - Loop Volume: 1.000 mL

POST RUN
- Post Time: 0.00 min

```
dified on: 10/19/2018 at 9:51:39 AM
        Load Time: 0.70 min
        Inject Time: 0.50 min
        Inlet:  Front Inlet
     Valve 2  Gas Sampling
        Loop Volume: 1.000 mL
        Load Time: 0.70 min
        Inject Time: 0.50 min
        Inlet:  Back Inlet
     Valve 7  Multiposition 16
        BCD input:  inverted
        Switch Time:  1.0 sec


  TIME TABLE
     Time(min)       Parameter & Setpoint
        0.10       Multi-Valve Position:         1
```

THE LINDE GROUP

Linde

SHIPPED TO: Enthalpy Analytical Inc.
3211 Bramer Drive
Raleigh , NC 27604

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#:	116533174	**Cylinder Size:**	152 (8" X 47.5")
Production#:	1460819	**Cylinder # :**	CC-314745
Certification Date:	Jul-13-2018	**Cylinder Pressure:**	2000 psig
P.O.# :	PO1022200	**Cylinder Valve:**	CGA 350 / Steel
Blend Type:	CERTIFIED	**Cylinder Volume:**	29.5 Liter
Material#:	24102763	**Cylinder Material:**	Aluminum
Traceability:	NIST by weight	**Gas Volume:**	4000 Liters
Expiration Date:	Jul-13-2019	**Blend Tolerance:**	5% Relative
Do NOT use under:	150 psig	**Analytical Accuracy:**	2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Acetylene	74-86-2	250 ppm	255 ppm
Chloromethane	74-87-3	250 ppm	255 ppm
Vinyl Chloride	75-01-4	250 ppm	255 ppm
Dimethyl Ether	115-10-6	250 ppm	259 ppm
Ethylene Oxide	75-21-8	250 ppm	256 ppm
Methylene Chloride	75-09-2	250 ppm	256 ppm
Cyclohexane	110-82-7	250 ppm	257 ppm
Isooctane	540-84-1	250 ppm	258 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST: _____
Lou Lorenzetti

DATE: Jul-13-2018

Linde Gas North America LLC

(908) 329-9700 Main (908) 329-9740 Fax
www.Lindeus.com

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
616 Miller Cut Off
La Porte, TX 77571
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED HYDROCARBON

Customer:	*MORRISVILLE , NC* - MONTROSE ENVIRONMENTAL GROUP		
Part Number:	X02NI99C15ACKW8	Reference Number:	126-400875670-1
Cylinder Number:	CC122424	Cylinder Volume:	114.8 CF
Laboratory:	124 - LaPorte Mix (SAP) - TX	Cylinder Pressure:	1602 PSIG
Analysis Date:	Mar 09, 2017	Valve Outlet:	350
Lot Number:	126-400875670-1	Expiration Date:	Mar 09, 2019

Traceability Statement: Hydrocarbon Process standards are NIST traceable either directly by weight or by comparison to Airgas laboratory standards that are directly NIST traceable by weight.

CERTIFIED CONCENTRATIONS

Component	Requested Concentration	Reported Volume %	Accuracy
ETHYLENE OXIDE	250.0 PPM	242.6 PPM	+/- 2%
NITROGEN	99.98 %	99.97574 %	+/- 2%

Permanent Notes:MONTROSE ENVIRONMENTAL/ENTHALPY ANALYTICAL

Notes:.
RECERTIFICATION
PO # 1007021
MONTROSE ENVIRONMENTAL / ENTHALPY ANALYTICAL

Approved for Release

This Is The Last Page Of This Report.

ENTHALPY ANALYTICAL

LifeNet Health®
Saving Lives. Restoring Health. Giving Hope.

Standard Operating Procedure

SOP	MP-30-014	REVISION: .09	PAGE: 1 of 9
TITLE:	SOLID WASTE HANDLING & REMOVAL	EFFECTIVE DATE: 1/14/19	SUPERSEDES: MP-30-014.08

1.0 Purpose:

1.1 To describe the process for the disposal and tracking of solid waste.

2.0 Scope:

2.1 This procedure pertains to the discarding and handling of solid waste at all LifeNet Health facilities.

3.0 System Owner: Support Services

4.0 Approvers:

4.1 Director of Quality Systems

4.2 Director of Tissue Recovery

4.3 Director of Laboratory Sciences

4.4 Director of Operations

4.5 Director of Logistics

4.6 Director OPO Quality Systems

4.7 Support Services Manager

4.8 Process Engineering

5.0 Definitions:

5.1 **Non-Regulated Waste (NRW)** - A waste or material that does not contain or is not suspected of containing an infectious substance. This includes Recyclable waste.

5.2 **Regulated Medical Waste (RMW)** *[Red Bag]* - A waste or material known to contain or suspected of containing an infectious substance. This includes but not limited to:

5.2.1 Laboratory wastes- All lab testing materials containing infectious agents.

5.2.2 All Contaminated* disposable Material, Equipment, and Instruments.

5.2.2.1 * *Material has to have the ability to release human blood or human body fluids in a liquid or semi- liquid state if compressed. Items that contain or that are caked with dried human blood or human body fluids and are capable of releasing these materials during handling. An item would be considered caked if it could release flakes or particles when handled.* (9VAC 20-120-130)

5.2.3 Blood, Blood Products, Body Fluids.

5.2.4 Sharps- Any items having a point or sharp edge or items that are likely to break during transportation and result in a point or sharp edge. (Examples include: needles, syringes, scalpel blades, blood tubes, slides, culture plates, etc.)

5.3 **Pathological Waste (PATH)**–Human or animal body parts, organs, and tissues.

5.4 **Primary** - A function (personnel or dept.) that has the foremost responsibility to perform a step in the process, exceptions are permitted.

5.5 **Secondary** - A function (personnel or department) that could be used as consultant for the primary functions for a step in the process. This function may also perform the steps in the process to support primary functions.

6.0 Procedure

6.1 Process A: Handling of Non-regulated Waste

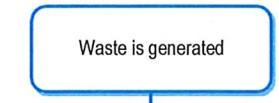
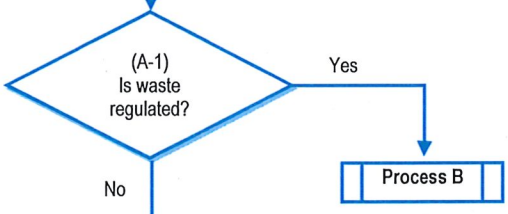
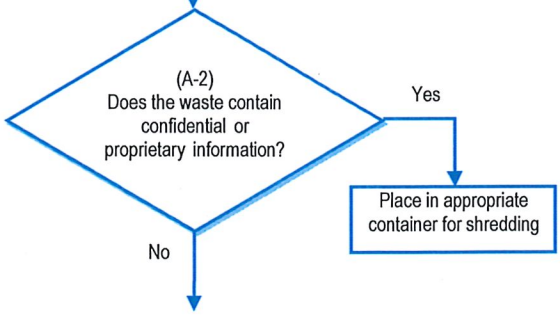
6.2 Process B: Handling of Regulated Medical Waste

6.3 Process C: Handling of Pathological Waste

6.4 Process D: Removal & Processing of Regulated/Pathological Waste Containers

6.5 Flowchart: Solid Waste Handling for Virginia Beach Facilities

PROCESS A: Non-regulated Waste

Responsibility (Who)	Process A (What)	Notes (How)
Primary: All Departments Secondary: Contracted Cleaning Crew		1. All waste must be properly segregated and packaged to prevent leakage, tearing, and/or bursting under normal handling conditions. 2. Safely remove excess air from trash bags to maximize utilization of the container and bins.
Primary: All Departments Secondary: Contracted Cleaning Crew		
Primary: All Departments Secondary:		1. All waste containing a donor name or any other identifier other that a donor number must be shredded.

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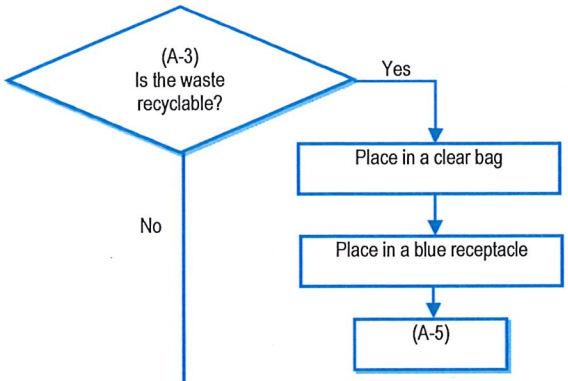
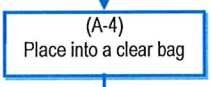
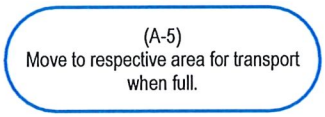
Responsibility (Who)	Process A (What)	Notes (How)
Primary: All Departments Secondary: Contracted Cleaning Crew		
Primary: All Departments Secondary: Contracted Cleaning Crew		
Primary: All Departments Secondary: Contracted Cleaning Crew		

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PROCESS B: Regulated Waste

Responsibility (Who)	Process B (What)	Notes (How)
Primary: All Departments Secondary:	Regulated Medical Waste generated	1. All waste must be properly segregated and packaged to prevent leakage, tearing, and/or bursting under normal handling conditions. 2. Safely remove excess air from trash bags to maximize utilization of the container and bins.
Primary: All Departments Secondary:	(B-1) Is it Pathological Waste? — Yes → Process C; No	
Primary: All Departments Secondary:	(B-2) Does the waste contain sharps? — Yes → Place in appropriate puncture-proof container → Is the container a Five (5) quart size? — Yes / No; No	
Primary: All Departments Secondary:	(B-3) Place in Red Biohazard bag	
Primary: All Departments Secondary:	(B-4) Place in transport container; Place supplier's barcode on the outside of the container	1. Ensure that all transport containers are completely closed. Do NOT overfill.
Primary: All Departments Secondary:	(B-5) Place in designated area for pick up	
Primary: All Departments Secondary:	Process D	

PROCESS C: Pathological Waste

Responsibility (Who)	Process C (What)	Notes (How)
Primary: All Departments Secondary:	Pathological Waste is generated	
Primary: All Departments Secondary:	(C-1) Place Pathological Waste label on the container	
Primary: All Departments Secondary:	(C-2) Dispose of waste in appropriate container	1. Pathological waste must be disposed of in a container labeled as "pathological waste". 2. If a cardboard container is used: a. The weight must not exceed 40 lbs. b. Line the container with a red bio-hazard bag. c. Absorbent material MUST be added to all liquids prior to placing them in the box. d. Place supplier's barcode on the outside of the box. e. Properly tie the bag and seal the lid of the box with packaging tape (H-style). f. Place checkmark in Pathological box on outside of container. g. If the container has a leak, it MUST be re-packaged.
Primary: All Departments Secondary:	(C-3) Complete Pathological Waste Discard Form FMP-0019 or FMP-0369(LNHNW)	1. Fill in Department and Bar Code information for each form. 2. Place form in a document protector taped to the transport container at all facilities. 3. Complete each line of the form as discard tissue is added to the form. Note: If the list of discarded tissue can be traced in SAP then you may state " Whole or Partial Donor- See SAP".
Primary: All Departments Secondary:	(B-5)	

PROCESS D: Removal & Processing of Regulated/Pathological Waste Containers

Responsibility (Who)	Process D (What)	Notes (How)
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	Regulated/Pathological Waste pickup	
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	(D-1) Inspect containers	1. Ensure that each container labeled as pathological waste has a completed Pathological Waste Discard Form with corresponding barcode number and legible disposal entries.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	(D-2) Is the container leaking or missing documentation? Yes → Contact department manager to correct No	1. The department manager is responsible for correcting any documentation or improper sealing issues.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	(D-3) Collect all Pathological Waste Discard Forms	
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	(D-4) Does your location have a scheduled pickup? No → Call vendor to schedule pickup Yes	1. If your facility does not have a reoccurring pickup schedule then you need to contact the appropriate disposal vendor to schedule a pickup.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments	(D-5) Waste is picked up for disposal	

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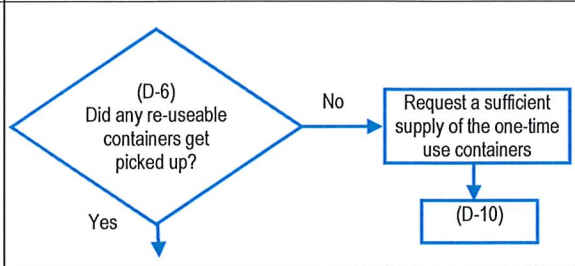
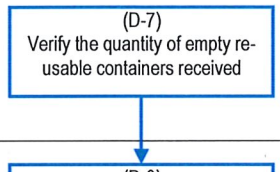
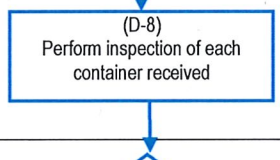
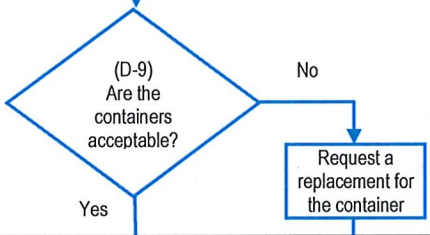
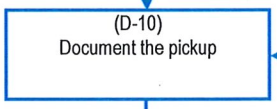
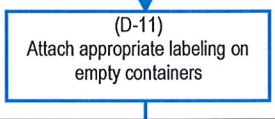
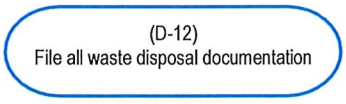
Responsibility (Who)	Process D (What)	Notes (How)
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		1. Ensure that the vendor delivers a quantity of empty containers that is equal to the amount of containers picked up for each type.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		1. Inspect each container for cleanliness, good working condition, properly labeled bio-hazard sticker, no presence of previously used barcode labels and ensure the container is empty.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		1. Review the vendor's waste disposal manifest for accuracy then sign and date the document.
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		1. Place supplier's barcode label on all re-usable containers. 2. Place "PATH Only" label on the 96 gallon containers
Primary: Support Services at Virginia Beach facilities Secondary: All Departments		1. Record the manifest document number, your initials and the pickup date in the bottom section of each Pathological waste disposal form (FMP-0019 or FMP-0369 for LNH-NW). 2. The manifest document and all Pathological waste forms for containers that were picked up should be stapled together for filing. 3. Review all Pathological waste forms for any GDP errors or incomplete fields. Notify the department manager for any required corrections.

6.5 Flowchart: Solid Waste Handling for Virginia Beach Facilities

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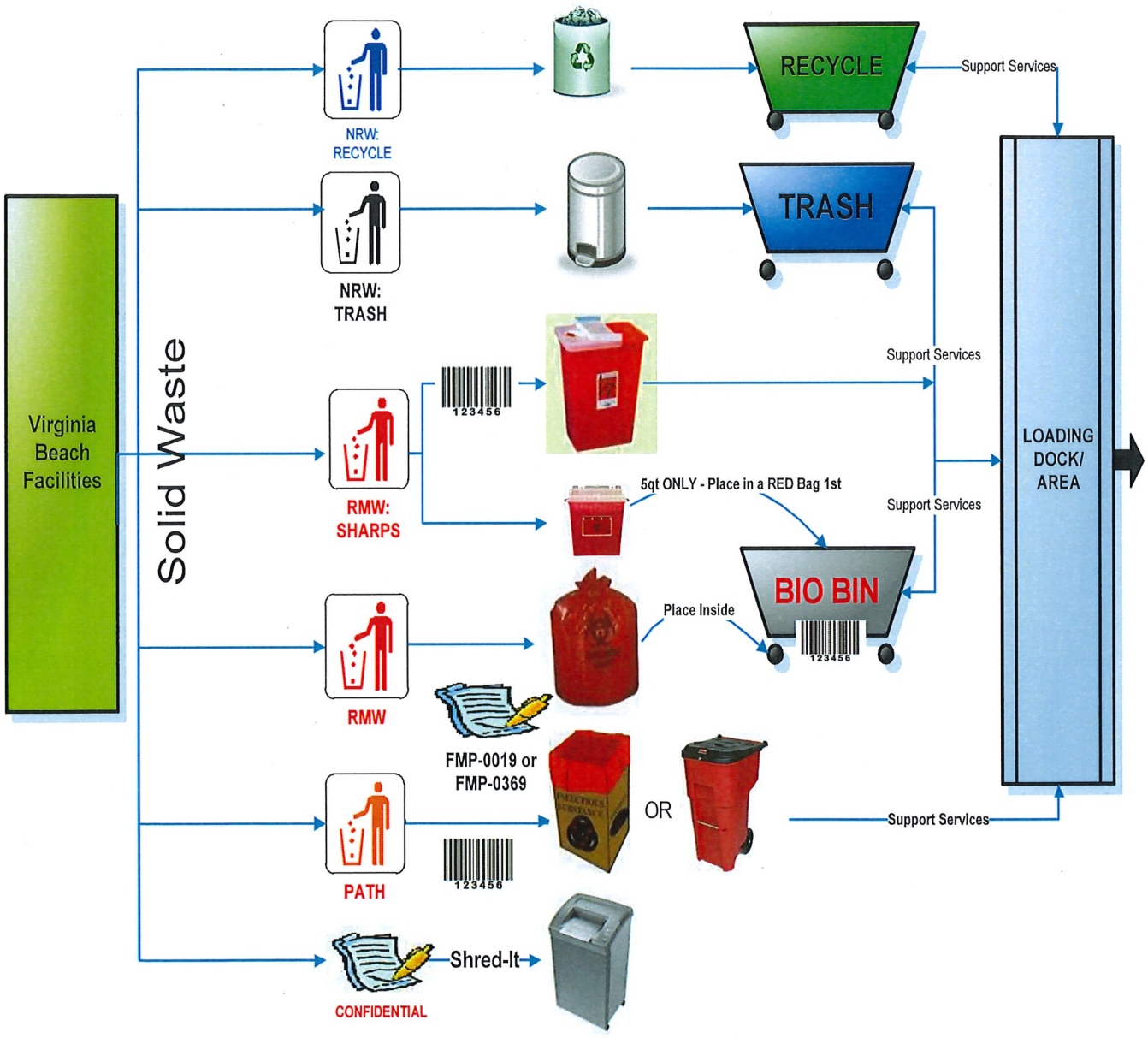

Document Revision History

Contact Document Control for information regarding previous revision levels.

Revised By	Effective Date	CCO	Summary of Changes
Cecilia Dolan	8/17/07	CC-07-476	Rev.000: PRO-SF-002.001 and PRO-SS-009.009 are obsolete and are being incorporated into MP-30-014 with some changes.
Elizabeth Ferraro	7/25/08	CC-08-532	Rev.001: Updated SOP to reflect all LifeNet Health locations.
Delvin E. Peeks	9/10/08	CC-08-661	Rev.002: Renamed the SOP to cover all solid waste. Added steps on the proper segregation and packaging of waste. Re-defined the difference between regulated and non-regulated waste. Added a flowchart for the transport & removal of waste.
Brandon Anderson/ Charity Holihan	3/31/10	CC-10-258	Rev.003: Converted to process flow format. Revised to reflect change to FMP-0019 Biohazard Waste Discard Form in order to track pathological waste only.
Brandon Anderson	1/12/11	CC-11-004	Rev.04: Added a step for labeling pathological Waste containers with a PATH label.
Brandon Anderson	3/6/17	#34582	Rev.05: Updated the logo
Shanna Mattson	5/25/17	#37061	Rev.06: Removed Virginia Beach from Process C so it would apply to all locations.
Brandon Anderson	9/1/17	#38543	Rev.07: Added FMP-0369 to the SOP for filing.
Brandon Anderson	2/2/18	#41310	Rev.08: Added note for Partial/ Whole donor discards on Step C-3. Added a review of Path forms to step D12.
Brandon Anderson	1/14/19	#47963	Rev.09: Updated A-3 to state clear bag instead of green bag per Audit# 35143